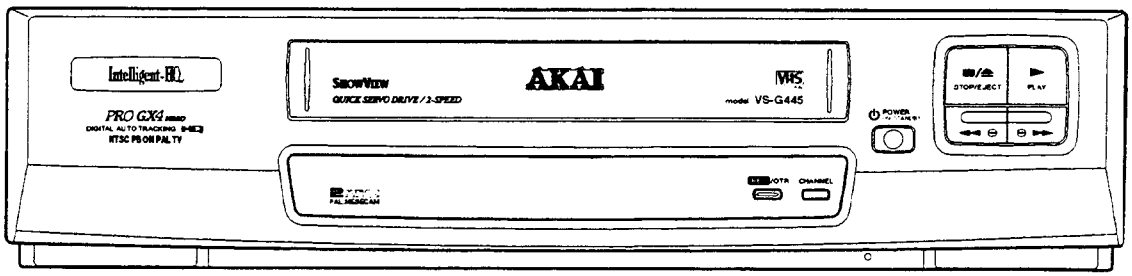
# AKAI SERVICE MANUAL




MODEL VS-G445EOH

HQ HIGH QUALITY VHS PAL SHOWVIEW

G-CODE VIDEOPlus+

VIDEO CASSETTE RECORDER

MODEL VS-G240EA/EDG/EK/EM/EOH

MODEL VS-G241EOH

MODEL VS-G245EA/EDG/EK/EO/EOH

MODEL VS-G246EA/EK, G247EOG

MODEL VS-G250EM-K, G254EOH

MODEL VS-G255EOH, G257EOG

MODEL VS-G440EA/EDG

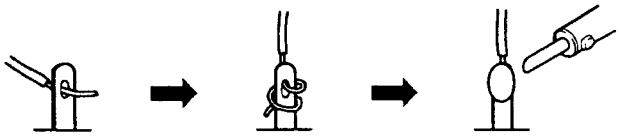
MODEL VS-G445EA/EDG/EK/EO/EOH

MODEL VS-G455EOH, G457EOG

# ★ SAFETY INSTRUCTIONS

## PRECAUTIONS DURING SERVICING

1. Parts identified by the ⚠ symbol are critical for safety. Replace them only with the parts number specified.
2. In addition to safety, other parts and assemblies are specified for conformance with such regulations as those applying to spurious radiation. These must also be replaced only with the specified replacements.
   Examples: RF converters, tuner units, antenna selector switches, RF cables, noise blocking capacitors, noise blocking filters, etc.
3. Use specified internal wiring. Note especially:
   1) Wires covered with PVC tubing
   2) Double insulated wires
   3) High voltage leads
4. Use specified insulating materials for hazardous live parts.
   Note especially:
   1) Insulation Tape
   2) PVC tubing
   3) Spacers (insulating barriers)
   4) Insulation sheets for transistors
   5) Plastic screws for fixing micro switches
5. When replacing AC primary side components (transformers, power cords, noise blocking capacitors, etc.), wrap the ends of the wires securely around the terminals before soldering.



6. Make sure that wires do not contact heat producing parts (heat sinks, oxide metal film resistors, fusible resistors, etc.).
7. Check that replaced wires do not contact sharp edged or pointed parts.
8. Also check areas surrounding repaired locations.
9. Make sure that foreign objects (screws, solder droplets, etc.) do not remain inside the set.

## SAFETY CHECK AFTER SERVICING

After servicing, make measurements of leakage-current or resistance in order to determine that exposed parts are acceptably insulated from the supply circuit.
The leakage-current measurement should be done between accessible metal parts (such as chassis, ground terminal, microphone jacks, signal input/output connectors, etc.) and the earth ground through a resistor of 1500 ohms paralleled with a 0.15 μF capacitor, under the unit's normal working conditions.
The leakage-current should be less than 0.5 mA rms AC.
The resistance measurement should be done between accessible exposed metal parts and power cord plug prongs with the power switch (if included) "ON". The resistance should be more than 2.2 M ohms.

## MAKE YOUR CONTRIBUTION TO PROTECT THE ENVIRONMENT

Used batteries with the ISO symbol for recycling as well as small accumulators (rechargeable batteries), mini-batteries (cells) and starter batteries should not be thrown into the garbage can.
Please leave them at an appropriate depot.

# ★ SPECIFICATIONS

Format
- EA/EK ..... VHS standard
- EDG/EM/EM-K/ EO/EOG/EOH ..... VHS standard (PAL/MESECAM)

Video recording system ..... Rotary, slant azimuth two-head helical scan system

Rotary heads
- VS-G240~G257 models .. 2 video heads
- VS-G440~G457 models .. 4 video heads

RF input
- EA ..... System B,G
  VHF: ch 0-5, 5A, 6-11, UHF: ch 21-69
- EDG ..... System D,K
  VHF: ch 1-12, UHF: ch 21-69
  System B,G
  VHF: ch 2-12, UHF: ch 21-69
  Cable: ch S1'-S3', S1-S41
- EK ..... System I
  UHF: ch 21-69
- EM ..... System B,G (PAL,SECAM)
  VHF: ch 2-12, UHF: ch 21-69
- EM-K ..... System D,K (OIRT ch)
  VHF: ch 2-12, UHF: ch 13-57
  System B,G (W.Europe ch)
  VHF: ch 2-12, UHF: ch 21-69
  System I (U.K. ch)
  UHF: ch 21-69
- EO ..... System B,G (PAL,SECAM)
  VHF: ch 2-4, 5-12, UHF: ch 21-69
  Cable: ch S1'-S3', S1-S20
- EOG/EOH ..... System B,G (PAL,SECAM)
  VHF: ch 2-4, 5-12, UHF: ch 21-69
  Cable: ch S1'-S3', S1-S41

RF output
- EA ..... System B type modulation
  VHF: ch 0,1 switchable (preset ch 1)
- EDG ..... System K/G type modulation
  UHF: ch 30-39 adjustable (preset ch 36)
- EK ..... System I type modulation
  UHF: ch 30-39 adjustable (preset ch 36)
- EM ..... System B type modulation
  VHF: ch 3,4 switchable (preset ch 4)
- EM-K ..... System G/K/I type modulation
  UHF: ch 30-39 adjustable (preset ch 36)
- EO/EOG/EOH ..... System G type modulation
  UHF: ch 30-39 adjustable (preset ch 36)

Recording (line input)
- EA/EK ..... PAL
- EDG/EM/EO/EOG/EOH .. PAL, SECAM (recorded as MESECAM)
- EM-K ..... PAL, SECAM (recorded as MESECAM)
  NTSC 3.58/4.43

Playback (line output)
- EA ..... PAL, NTSC 4.43 (NTSC tape)
  Simulated PAL (NTSC tape)
- EDG/EM/EM-K ..... PAL, SECAM (MESECAM tape)
  NTSC 4.43 (NTSC tape)
  Simulated PAL (NTSC tape)
- EK ..... PAL, Simulated PAL (NTSC tape)
- EO/EOG/EOH ..... PAL, SECAM (MESECAM tape)
  Simulated PAL (NTSC tape)

Video
- Line input level ..... 0.5-2.0 Vp-p/75 ohms, unbalanced
- Line output level ..... 1.0 Vp-p/75 ohms, unbalanced
- S/N ratio ..... More than 45 dB
- Horizontal resolution ..... More than 250 lines

Audio
- Line input level ..... –6 dBs/50 k ohms, unbalanced
- Line output level ..... –6 dBs/2 k ohms, unbalanced
- S/N ratio ..... More than 40 dB
- Frequency response ..... 70-8,000 Hz

Recording/Playback time

2 head models
(except VS-G240EM/G240EK/G245EK/G246EK/G250EM-K)
- CCIR ..... 240 min. with E-240 cassette
- NTSC (playback only) ..... 160 min. with T-160 cassette

2 head models (VS-G240EM/G240EK/G245EK/G246EK only)
- CCIR ..... 240 min. with E-240 cassette in SP mode
  480 min. with E-240 cassette in LP mode
- NTSC (playback only) ..... 160 min. with T-160 cassette in SP mode
  480 min. with T-160 cassette in EP mode

VS-G250EM-K
- CCIR ..... 240 min. with E-240 cassette in SP mode
  480 min. with E-240 cassette in LP mode
- NTSC ..... 160 min. with T-160 cassette in SP mode
  480 min. with T-160 cassette in EP mode

4 head models
- CCIR ..... 240 min. with E-240 cassette in SP mode
  480 min. with E-240 cassette in LP mode
- NTSC (playback only) ..... 160 min. with T-160 cassette in SP mode
  480 min. with T-160 cassette in EP mode

Tape speed

2 head models
(except VS-G240EM/G240EK/G245EK/G246EK/G250EM-K)
- CCIR ..... 23.39 mm/sec.
- NTSC ..... 33.35 mm/sec.

2 head models
(VS-G240EM/G240EK/G245EK/G246EK G250EM-K only)
- CCIR ..... 23.39 mm/sec. in SP mode
  11.695 mm/sec. in LP mode
- NTSC ..... 33.35 mm/sec. in SP mode
  11.12 mm/sec. in EP mode

4 head models
- CCIR ..... 23.39 mm/sec. in SP mode
  11.695 mm/sec. in LP mode
- NTSC ..... 33.35 mm/sec. in SP mode
  11.12 mm/sec. in EP mode

Quick finder ..... 5 times normal speed in all modes
FF, RWD time ..... Approx. 140 sec. with E-180 cassette
Timer
- Program ..... 4 programs/1 year and OTR
- Clock reference ..... Quartz crystal

Display ..... FLD (tape counter, timer etc.)
Power requirement
- EM/EM-K ..... 110-240 V AC, 50/60 Hz
- Except EM/EM-K ..... 220-240 V AC, 50 Hz

Power consumption ..... 16 W
Operating temperature ..... 5°C-40°C
Dimensions ..... 380 (W) x 90 (H) x 276 (D) mm
Weight ..... 4.0 kg

**Standard accessories**
- Antenna cable ..... 1
- Remote control unit ..... 1
- Batteries for remote control ..... 2
- AC cord ..... 1
- AC plug adaptor
  - CCT5902-0701 ..... 1 (G240EM(Y7)/G250EMK(Y7)/G440EDG only)
  - ECP-L01BK-R5 ..... 1 (G240EK/G245EK/G246EK/G250EM-K(Y6)/G445EK only)
- Operator's manual ..... 1

0 dBs : 0.775 VRMS

* For improvement purposes, specifications and design are subject to change without notice.
* VIDEO PLUS AND PLUSCODE ARE TRADEMARKS OF GEMSTAR DEVELOPMENT CORP.
  VIDEO PLUS SYSTEM IS MANUFACTURED UNDER LICENCE FROM GEMSTAR DEVELOPMENT CORPORATION
* SHOWVIEW IS A TRADEMARK APPLIED FOR BY GEMSTAR DEVELOPMENT CORPORATION.
  SHOWVIEW SYSTEM IS MANUFACTURED UNDER LICENCE FROM GEMSTAR DEVELOPMENT CORPORATION.
* G-CODE IS A TRADEMARK APPLIED FOR BY GEMSTAR DEVELOPMENT CORPORATION.
  G-CODE SYSTEM IS MANUFACTURED UNDER LICENCE FROM GEMSTAR DEVELOPMENT CORPORATION.

# ★ INFORMATION

## TRACKING/STABILITY ADJUSTMENT

To correct tracking during the normal playback, slow or still mode, only the remote control buttons can be used for the following adjustment.

- **To correct tracking during playback**
  If the tracking is not corrected satisfactorily by the automatic tracking function, press the remote control's "<" or ">" button until the picture is clear.

- **To correct tracking during the still mode**
  Press the remote control's "<" or ">" button repeatedly until the picture is clear.

- **To correct picture shake during the slow motion or still mode**
  Press the remote control's "∧" or "∨" button repeatedly until the picture shake is corrected.

## ERROR ANNOUNCEMENT

When a malfunction occurs, the following error indicators appear on the FL display to indicate the problem when the power is turned off.

Err 1 : AL power supply has short circuited.

Err 2 : The loading motor has stopped.
(When the mechanism position detect switch is not able to read the specified code, that is to say not able to reach the specified position within the specified time.)

Err 3 : The drum motor has stopped.
(When the drum motor does not rotate due to condensation, etc.)

## PRESETS IN THE TEST MODE

**1) Engaging the "TEST MODE"**

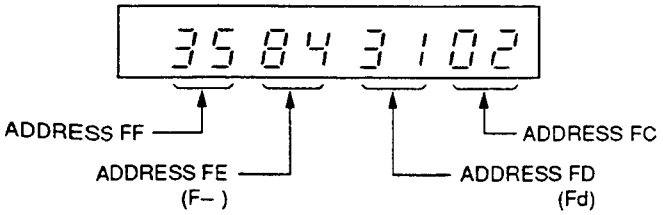
To set the VCR to the TEST MODE, press the "reset" button on the front panel first then plug in the AC power cord while pressing and holding both the "POWER" and "STOP/EJECT" buttons (on the front panel) at the same time.

Press the "reset" button to disengage the "TEST MODE". (The test mode is not disengaged, even if the AC cord is disconnected, without pressing the "reset" button.)

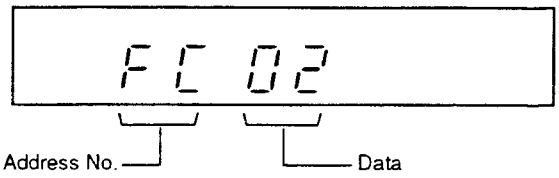
**NOTE:** Once the "reset" button has been pressed, clock and program data will be cancelled.

**2) Model code preset**

1. Engage the "test mode". The model code will be displayed in the FL display in 8 digit form.




2. While pressing both the "FF" and "RWD" buttons, press the "reset" button. (Never release the "FF", "RWD" buttons and "reset" button at the same time. Make sure to release the "reset" button first. Then keep holding the "FF" and "RWD" buttons until the address number "FC" appears.)
   The address number will be shown in 2 digits in the minutes display of the FL display and its data will be shown in 2 digits in the seconds display.




3. Select address "FC" by pressing the "FF" or "FWD" button if the address "FC" is not appeared.
4. Choose the data in the address FC column, that corresponds to the model number you are working on, from the following list. Set the chosen data value by pressing the "STOP" or "PLAY" button.

| MODEL | MODEL CODE | ADDRESS | | | |
|---|---|---|---|---|---|
| | | FC | Fd | F– | FF |
| VS-G240EA | 16243802 | 02 | 38 | 24 | 16 |
| VS-G240EDG | 16803B02 | 02 | 3b | 80 | 16 |
| VS-G240EK | 37563002 | 02 | 30 | 56 | 37 |
| VS-G240EM | 17043B02 | 02 | 3b | 04 | 17 |
| VS-G240EOH(E) | 1684B102 | 02 | b1 | 84 | 16 |
| VS-G240EOH(Y1) | 16843102 | 02 | 31 | 84 | 16 |
| VS-G241EOH(Y1) | 16843102 | 02 | 31 | 84 | 16 |
| VS-G245EA | 36243802 | 02 | 38 | 24 | 36 |
| VS-G245EDG | 3680BB02 | 02 | bb | 80 | 36 |
| VS-G245EK | 4F563002 | 02 | 30 | 56 | 4F |
| VS-G245EO | 36043102 | 02 | 31 | 04 | 36 |
| VS-G245EOH(Y1) | 36843102 | 02 | 31 | 84 | 36 |
| VS-G246EA | 36243802 | 02 | 38 | 24 | 36 |
| VS-G246EK | 4F163002 | 02 | 30 | 16 | 4F |
| VS-G247EOG | 3692B102 | 02 | b1 | 92 | 36 |
| VS-G250EM-K | 17043F00 | 00 | 3F | 04 | 17 |
| VS-G254EOH(Y1) | 4E96B102 | 02 | b1 | 96 | 4– |
| VS-G255EOH(E) | 4E84B102 | 02 | b1 | 84 | 4– |
| VS-G255EOH(Y1) | 4E96B102 | 02 | b1 | 96 | 4– |
| VS-G257EOG | 4E92B102 | 02 | b1 | 92 | 4– |
| VS-G440EA | 15243802 | 02 | 38 | 24 | 15 |
| VS-G440EDG | 15803B02 | 02 | 3b | 80 | 15 |
| VS-G445EA | 35243802 | 02 | 38 | 24 | 35 |
| VS-G445EDG | 3580BB02 | 02 | bb | 80 | 35 |
| VS-G445EK | 4D563002 | 02 | 30 | 56 | 4d |
| VS-G445EO | 35043102 | 02 | 31 | 04 | 35 |
| VS-G445EOH(Y1) | 35843102 | 02 | 31 | 84 | 35 |
| VS-G455EOH(E) | 4D84B102 | 02 | b1 | 84 | 4d |
| VS-G455EOH(Y1) | 4D96B102 | 02 | b1 | 96 | 4d |
| VS-G457EOG | 4D92B102 | 02 | b1 | 92 | 4d |

(On the FL display, B and D are indicated with small letters and E is indicated with –.)

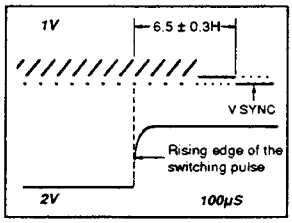
5. Memorize the data into the EEP ROM IC by pressing the "REC" button.

6. The address "Fd" and its data will be shown in the FL display approx 2 seconds later automatically. Repeat the presetting (steps 4 to 5) for addresses "Fd", "F–" and "FF" in the same manner as address "FC".
7. Press the "reset" button to disengage the model code preset mode.

NOTE : This model code preset is absolutely necessary when the IC404 (EEP-ROM) on the MAIN PCB is replaced.

**3) Video switching point preset**

1. Engage the "test mode".
2. Connect CH-1 of an oscilloscope to VIDEO OUT and CH-2 to the TP852 (V-SWP) on the PRE AMP PCB for triggering.
3. Play back the reference tape TF-530RFS (Part No.: AT-751775). Check the seconds display of the FL display so that "1F" (center position in the tracking range) is indicated at this point. If not indicated, press the "<" or ">" button on the remote control until "1F" is indicated.
4. Press the "REC" button during playback.
5. Confirm that the switching point is positioned 6.5±0.3 H before the left edge of the V-sync as shown.




NOTE :

a) Make sure that the A/C head phase adjustment has been adjusted correctly before making video switching point preset. (Refer to step 5-3-2)
b) This switching point preset is absolutely necessary after the following replacements.

- When the video head drum (upper drum) is replaced.
- When the DRUM MOTOR PCB or DRUM MOTOR's ROTARY MAGNET (ROTARY PLATE) is replaced.
- When the SERVO/SYSCON MI-COM or EEP ROM IC on the MAIN PCB is replaced.

**4) Memorization of the reference RF envelope detect voltage (I-HQ)**

For correct operation of the I-HQ tape tuning system, memorization of the reference RF envelope detect voltage is absolutely necessary. When the VIDEO HEAD DRUM, PRE AMP PCB or EEP ROM IC in the MAIN PCB is replaced for any reason, memorize the reference RF envelope detect voltage according to the following procedure.

1. Set the tape speed to "SP mode".
2. Make a recording on the I-HQ test tape "TF-556AT" (Part No. : AT-751822J) and rewind it to the exact point where the recording was started.
3. Set the VCR to the "test mode" then start playback.
4. Reference RF envelope detect voltage data in the memory is displayed in 2 digits in the hours display part of the FL display and the present envelope detect voltage data is displayed in 2 digits in the minutes display part (the data is displayed in hexadecimal numbers).
5. After the auto tracking has been activated, press the "CANCEL" button on the remote control. The present RF envelope detect voltage data will be transferred to the hour display 2 digits and memorized in the EEP ROM IC.
6. Cancel the "test mode" then set the tape speed to "LP mode" and repeat steps 2 to 5 for 2 speed models.

**5) Other facilities in the test mode**

**1. Tracking position display**

Tracking position data can be displayed on the FL display. Data is displayed in 64 steps in hexadecimal numbers from "00" to "3F" in the seconds display part on the FL display. Pressing the "TV/VCR" button on the remote control during playback directly sets the tracking to the maximum "3F" position and pressing the "COUNTER RESET" button sets it to the minimum "00" position.

Pressing the "PLAY" button during playback sets tracking to the center position "1F" automatically. If "1F" does not appear, even when the "PLAY" button is pressed, keep pressing the "<" or ">" button on the remote control until the "1F" appears and then press the "OK" button to memorize the position.

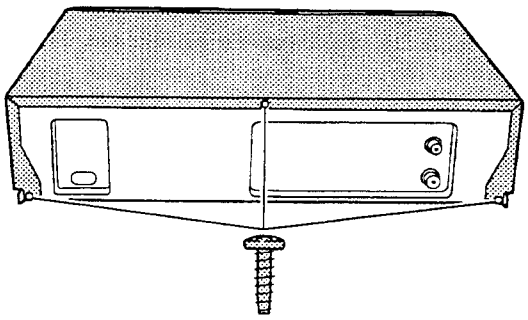
**2. Suspension of the tape protection system**

When the VCR is not in the "test mode", the "STILL" mode will be released after 5 minutes in order to protect the tape (the VIDEO HEAD DRUM stops rotating). However, the "STILL mode" will not be released during the "test mode".

# I. DISASSEMBLY

In case of trouble, etc., necessitating dismantling, please dismantle in the order shown in the illustrations.
Reassemble in the reverse order.
When reattaching the FRONT PANEL, hold the cassette loading slot door in the upright (open) position.

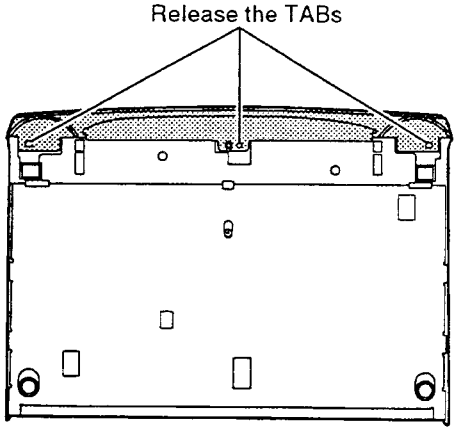
1. Removal of UPPER COVER



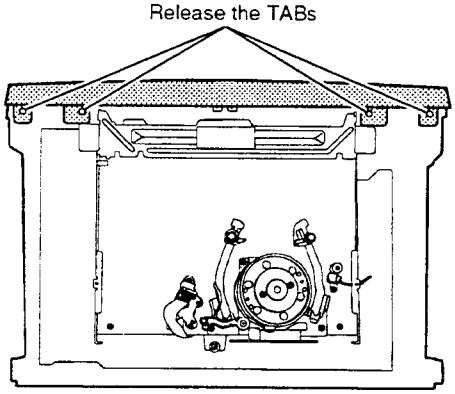
Slide the UPPER COVER backwards approx. 1 cm then lift the back part of the UPPER COVER up to remove.

2. Removal of FRONT PANEL

Release the TABs



Release the TABs



# II. PRINCIPAL PARTS LOCATION

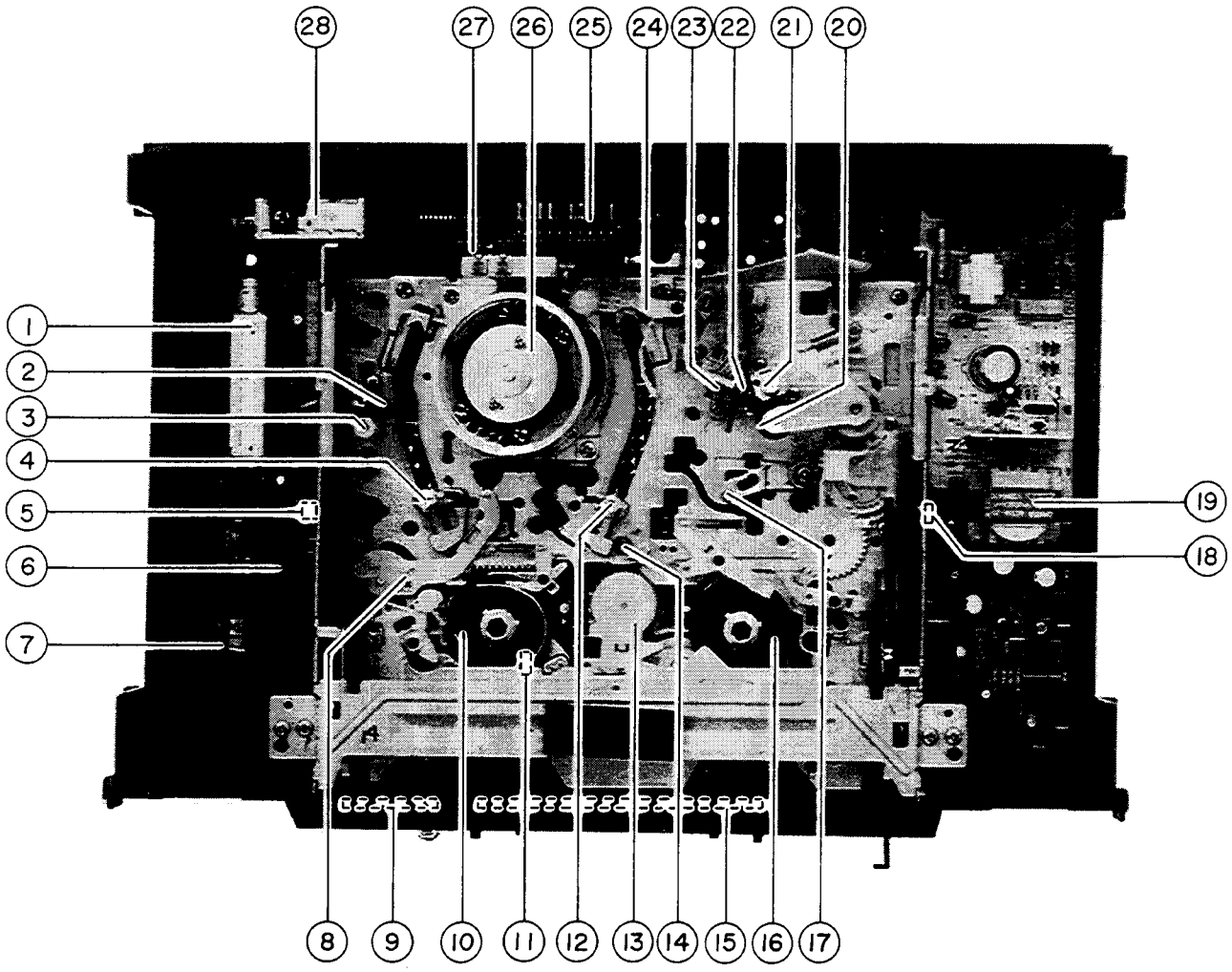



Fig. 2-1 Top view

1. TUNER UNIT
2. FULL TRACK ERASE HEAD
3. SUPPLY TAPE GUIDE
4. SUPPLY LOADING LEADER
5. END SENSOR
6. MAIN PCB
7. VIF PCB
8. TENSION ARM
9. DETECT PCB
10. SUPPLY REEL TABLE
11. REC SAFETY SWITCH
12. TAKE UP LOADING LEADER
13. IDLER ARM PART
14. SENSOR LED
15. FLD (FLUORESCENT DISPLAY)
16. TAKE UP REEL TABLE
17. REVIEW ARM
18. START SENSOR
19. PULSE POWER TRANSFORMER
20. PINCH ROLLER
21. CAPSTAN MOTOR BLOCK
22. TAKE UP TAPE GUIDE
23. A/C (AUDIO, CONTROL & SIDE TRACK ERASE) HEAD
24. HEAD CLEANER BLOCK
25. CANAL PLUS PCB (with DECODER models only)
26. VIDEO HEAD DRUM BLOCK
27. PRE AMP PCB
28. RF CONVERTER

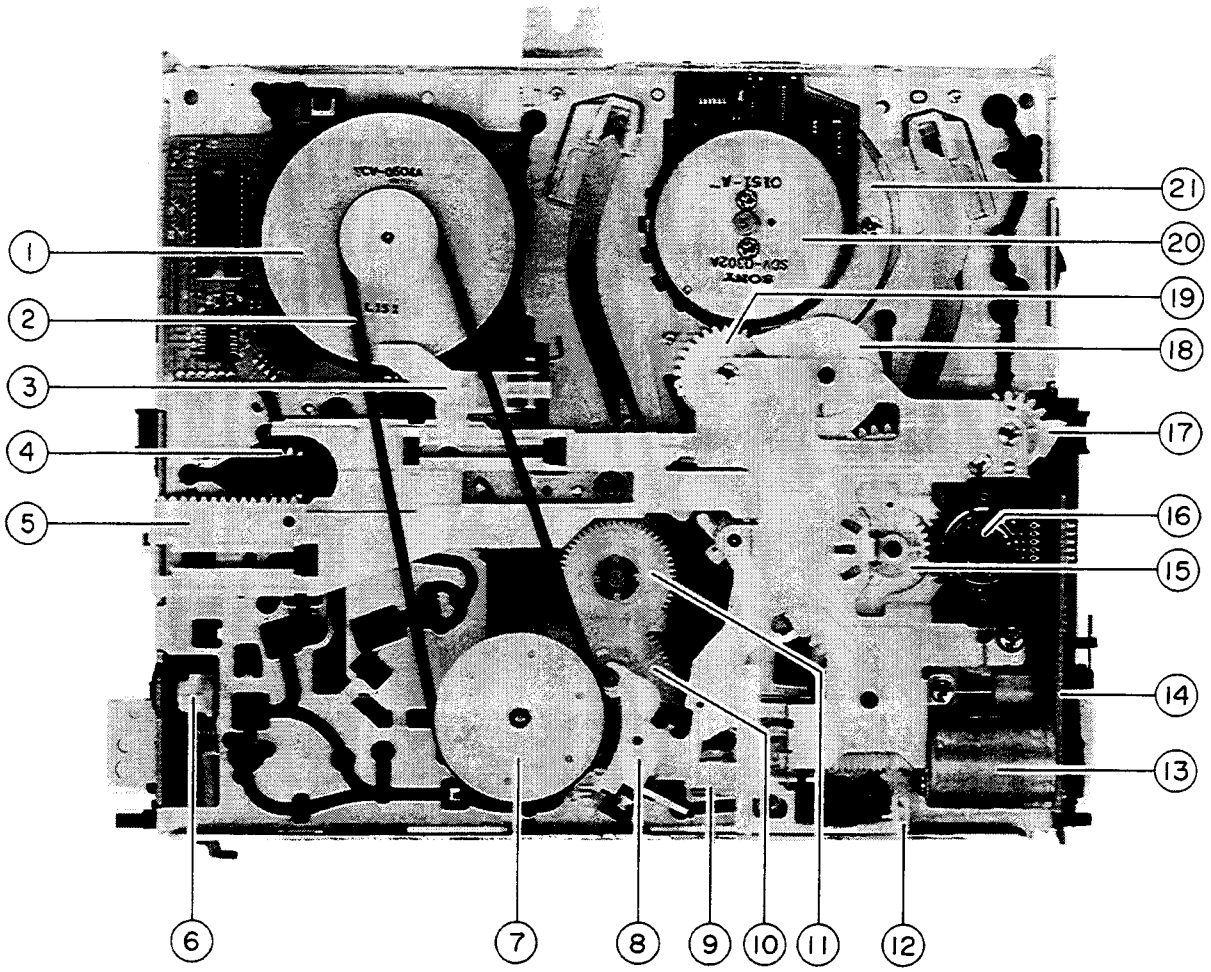



Fig. 2-2 Bottom view

1. CAPSTAN MOTOR BLOCK
2. CAPSTAN BELT
3. STILL BRAKE PART
4. PINCH GEAR
5. PINCH SLIDER
6. LOADING ARM BLOCK
7. CLUTCH DISK PART
8. COUPLING ARM
9. TRIGGER SLIDER
10. COUPLING GEAR BLOCK
11. IDLER ARM PART
12. REC.S LEVER
13. LOADING MOTOR
14. LM/MS PCB
15. CAM SLIDER GEAR
16. MODE DETECT SWITCH
17. FRONT LOADING GEAR
18. TOGGLE (S) GEAR BLOCK
19. TOGGLE (T) GEAR BLOCK
20. DRUM MOTOR BLOCK
21. DRUM CHASSIS

# III. VIEWING THE OPERATION OF THE BOTTOM SIDE OF THE MECHANISM BLOCK

※ In case you want to check the operation of the bottom side of the mechanism block, proceed as follows.

## 3-1. REMOVAL OF THE FRONT PANEL BLOCK

1) Remove the FRONT PANEL BLOCK (refer to step 1-2, on page 6).

## 3-2. REMOVAL OF THE MECHANISM BLOCK

1) Disconnect the connector on the FULL TRACK ERASE HEAD.

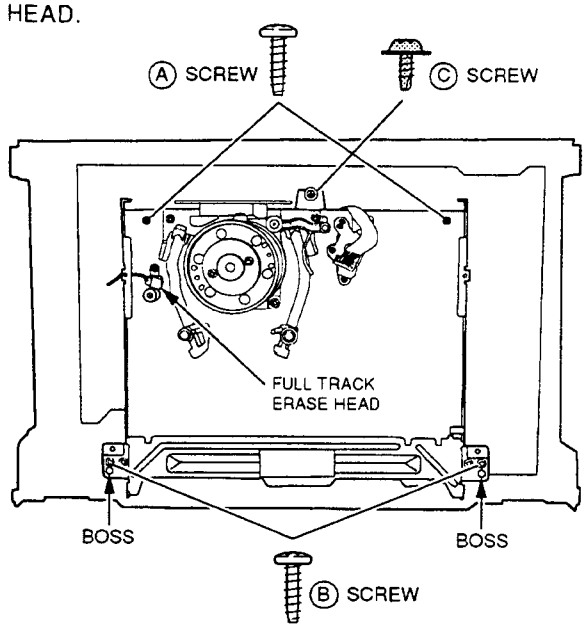



Fig. 3-1

2) Remove the two Ⓐ screws, two Ⓑ screws and the Ⓒ screw as shown in Fig. 3-1.
3) Remove the MECHANISM BLOCK and place an insulated sheet (or any suitable insulated material) on the MAIN PCB.
4) Place the MECHANISM BLOCK on the insulated sheet etc., standing it on end as shown in Fig. 3-2 taking care not to damage the flat cable on the PRE AMP PCB.

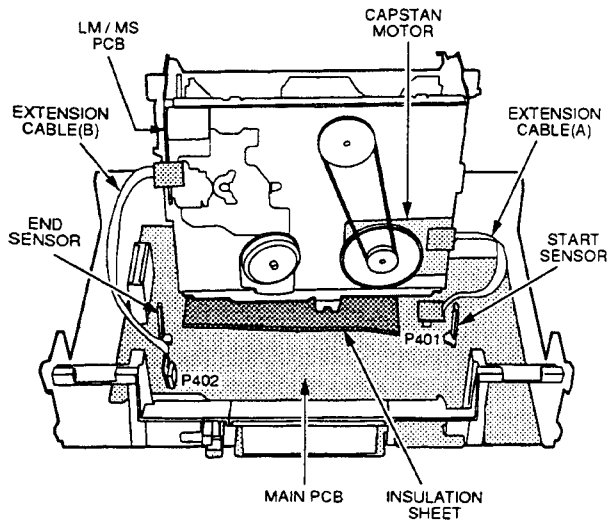



Fig. 3-2

## 3-3. CONNECTING THE EXTENSION CABLES

1) Connect the two extension cables (which were previously provided as the service jig) between the CAPSTAN MOTOR BLOCK and the P401 connector on the MAIN PCB, the LM/MS PCB and P402 connector on the MAIN PCB.

**NOTE :** The "front" mark on the extension cable (A)'s PCB must be facing front when connecting.

## 3-4. TURNING THE POWER ON

1) Place a cover (a ball point pen's cap etc.) on the start sensor, as shown in Fig. 3-2, in order to intercept the light to the sensor. The cover must be black or metal.
2) Engage the test mode (refer to information section, "PRESETS IN THE TEST MODE").
3) Remove the cover on the start sensor immediately after the cassette tape is inserted in the ejector. So the tape is drawn down automatically.
4) Cover both the start and end sensors at the same time with the covers just before the cassette tape reaches the lower position.
   Although the reel pulse is not generated, normal playback and CUE, REVIEW modes can be operated in this condition.
5) In case you want to change the tape, eject the present tape by pressing the "EJECT" button then remove the cover on the end sensor and repeat steps 3) to 4).

# IV. DISASSEMBLY OF THE MAIN COMPONENTS

## 4-1. REMOVAL OF THE MECHANISM BLOCK

**NOTE :** Some parts in the mechanism block require complete removal of the mechanism block from the chassis when performing servicing.
Set the loading mechanism to the "EJECT" position by pressing the EJECT button. Then disconnect the AC power plug from the AC socket before proceeding. This sets the loading mechanism to the "reference position".

### 4-1-1. Removal of the PRE AMP PCB

1) Disconnect the flat cable from the P851 connector on the PRE AMP PCB.

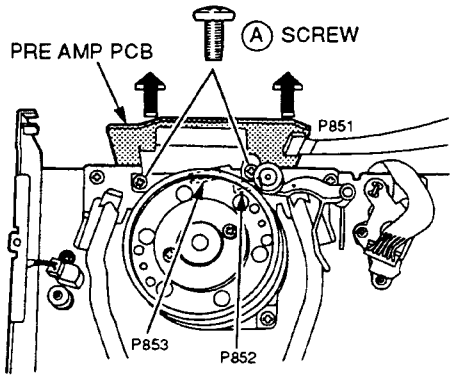



Fig. 4-1

2) Remove the two Ⓐ screws, then press both the left and right end of the PRE AMP PCB backward (in the direction of the arrow) as shown in Fig. 4-1.
3) Proceed in the reverse order for installation. Carefully align the connectors between the one on the LOWER DRUM, the one on the DRUM MOTOR PCB and P852 P853 on the PRE AMP PCB.

**NOTE :** Removal of the MECHANISM BLOCK is possible without removing the PRE AMP PCB.

### 4-1-2. Removal of the MECHANISM BLOCK.

1) Remove the FRONT PANEL BLOCK (refer to step 1-2 on page 6).
2) Disconnect the P851 connector on the PRE AMP PCB as shown in Fig. 4-1 if the PRE AMP PCB has not been removed.
3) Disconnect the connector on the FULL TRACK ERASE HEAD.
4) Disconnect the P1 connector on the A/C HEAD PCB.
5) Remove the two Ⓑ, Ⓒ screws and Ⓓ screw as shown in Fig. 4-2.
6) Pull up the MECHANISM BLOCK carefully to detach it from the chassis and the MAIN PCB.

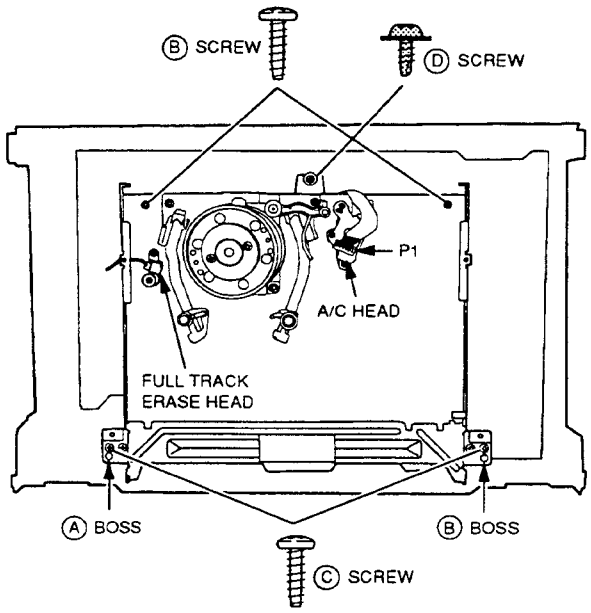



Fig. 4-2

### 4-1-3. Installation of the MECHANISM BLOCK

1) Carefully align the Ⓐ and Ⓑ bosses on the chassis with their corresponding holes on the MECHANISM BLOCK and tighten the five screws (refer to Fig. 4-2).
2) Proceed in the reverse order of 4-1-1 to 4-1-2, 4) for installation.

## 4-2. REMOVAL OF THE EJECTOR BLOCK

### 4-2-1. Removal of the CASSETTE LOAD BLOCK

1) Remove the two Ⓐ screws on the UPPER PLATE, as shown in Fig. 4-3 then remove the UPPER PLATE.

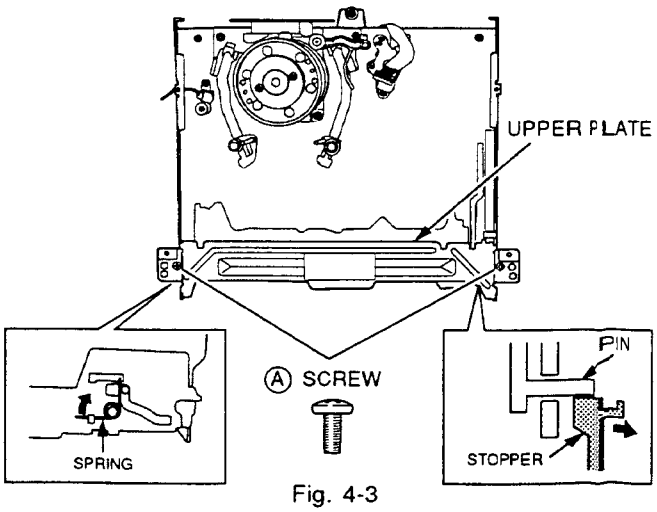



Fig. 4-3

2) Unhook the spring and remove it as shown in Fig. 4-3.
3) While pressing the right STOPPER in the direction of the arrow (refer to Fig. 4-3), gently remove the right side pin of the CASSETTE LOAD BLOCK from the rail by pulling it in the forward direction. Next, remove the left side pin in the same manner, then remove the CASSETTE LOAD BLOCK. To avoid damaging the pins of the CASSETTE LOAD BLK and the rail of the MECHA. FRAME, do not use excessive force when removing the CASSETTE LOAD BLK.

# IV. DISASSEMBLY OF THE MAIN COMPONENTS

## 4-1. REMOVAL OF THE MECHANISM BLOCK

**NOTE :** Some parts in the mechanism block require complete removal of the mechanism block from the chassis when performing servicing.
Set the loading mechanism to the "EJECT" position by pressing the EJECT button. Then disconnect the AC power plug from the AC socket before proceeding. This sets the loading mechanism to the "reference position".

### 4-1-1. Removal of the PRE AMP PCB

1) Disconnect the flat cable from the P851 connector on the PRE AMP PCB.

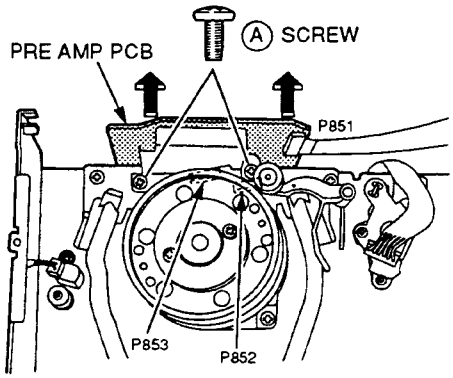



Fig. 4-1

2) Remove the two Ⓐ screws, then press both the left and right end of the PRE AMP PCB backward (in the direction of the arrow) as shown in Fig. 4-1.
3) Proceed in the reverse order for installation. Carefully align the connectors between the one on the LOWER DRUM, the one on the DRUM MOTOR PCB and P852 P853 on the PRE AMP PCB.

**NOTE :** Removal of the MECHANISM BLOCK is possible without removing the PRE AMP PCB.

### 4-1-2. Removal of the MECHANISM BLOCK.

1) Remove the FRONT PANEL BLOCK (refer to step 1-2 on page 6).
2) Disconnect the P851 connector on the PRE AMP PCB as shown in Fig. 4-1 if the PRE AMP PCB has not been removed.
3) Disconnect the connector on the FULL TRACK ERASE HEAD.
4) Disconnect the P1 connector on the A/C HEAD PCB.
5) Remove the two Ⓑ, Ⓒ screws and Ⓓ screw as shown in Fig. 4-2.
6) Pull up the MECHANISM BLOCK carefully to detach it from the chassis and the MAIN PCB.

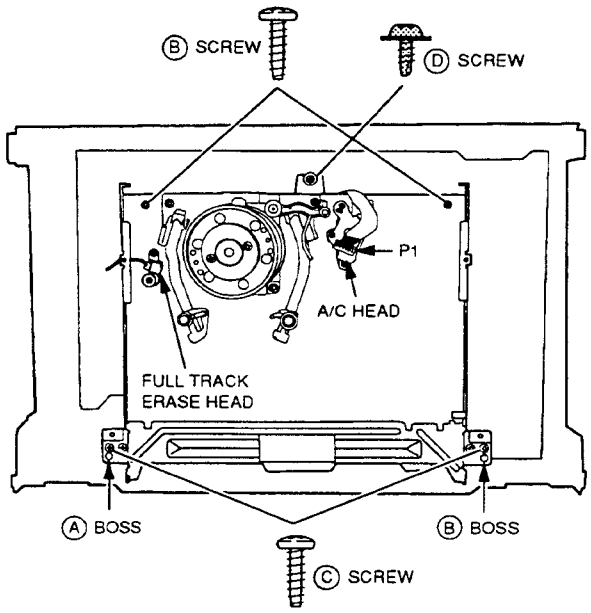



Fig. 4-2

### 4-1-3. Installation of the MECHANISM BLOCK

1) Carefully align the Ⓐ and Ⓑ bosses on the chassis with their corresponding holes on the MECHANISM BLOCK and tighten the five screws (refer to Fig. 4-2).
2) Proceed in the reverse order of 4-1-1 to 4-1-2, 4) for installation.

## 4-2. REMOVAL OF THE EJECTOR BLOCK

### 4-2-1. Removal of the CASSETTE LOAD BLOCK

1) Remove the two Ⓐ screws on the UPPER PLATE, as shown in Fig. 4-3 then remove the UPPER PLATE.

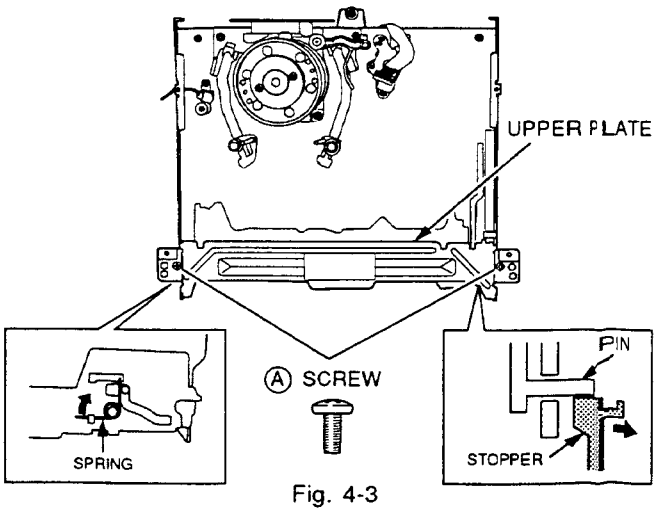



Fig. 4-3

2) Unhook the spring and remove it as shown in Fig. 4-3.
3) While pressing the right STOPPER in the direction of the arrow (refer to Fig. 4-3), gently remove the right side pin of the CASSETTE LOAD BLOCK from the rail by pulling it in the forward direction. Next, remove the left side pin in the same manner, then remove the CASSETTE LOAD BLOCK. To avoid damaging the pins of the CASSETTE LOAD BLK and the rail of the MECHA. FRAME, do not use excessive force when removing the CASSETTE LOAD BLK.

### 4-2-2. Removal of the LOADING ARM BLK

1) Release the stopper on the right side end of the LOADING ARM BLK's shaft (refer to Fig. 4-4) by pressing the stopper tab with a flat head (—) screwdriver. Then remove the shaft's right end from the bracket.

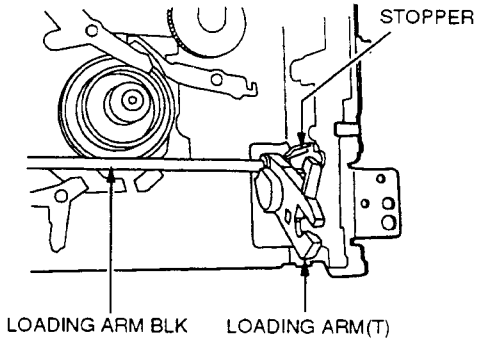



Fig. 4-4

2) Hold the LOADING ARM (T) and then pull out the shaft's left end from the bracket. Take special care when removing it to avoid damaging the pins (refer to Fig. 4-4).

### 4-2-3. Reassembling

1) Proceed in the reverse order of 4-2-1 to 4-2-2 for installation.

## 4-3. REMOVAL OF THE MODE DETECT SWITCH

Before proceeding with removal of the MODE DETECT SWITCH, the loading mechanism must be set to the "reference" position. If it has not already been set, use the following procedure to set the reference position.

※ Connect a 6 V battery to the loading motor until both the cam slider gear and mode detect switch reach the reference position (refer to Fig. 4-6).

### 4-3-1. Removal of the MODE DETECT SWITCH

1) Unsolder the 5 leads of the mode detect switch.

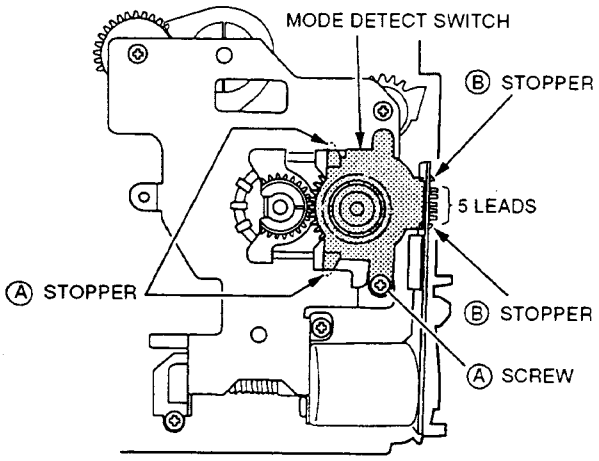



Fig. 4-5

2) Remove the Ⓐ screw.
3) While releasing the two Ⓐ stoppers and two Ⓑ stoppers, carefully remove the MODE DETECT SWITCH by pulling it up and to the left.

### 4-3-2. Installation of the MODE DETECT SWITCH

1) Install the mode detect switch in the reverse order of 4-3-1. When mounting the mode detect switch, align the mode detect switch's Ⓐ mark with the Ⓑ mark on the cam slider gear as shown in Fig. 4-6.

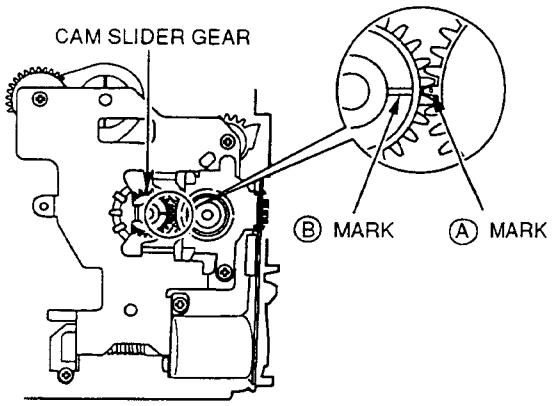



Fig. 4-6

## 4-4. DISASSEMBLY OF THE LOADING DRIVE BLOCK

※ Set the loading mechanism to the "reference" position. Refer to 4-3, "REMOVAL OF THE MODE DETECT SWITCH" before proceeding.

### 4-4-1. Removal of the LOADING DRIVE BLOCK

1) Remove the MODE DETECT SWITCH (refer to 4-3-1 "removal of the MODE DETECT SWITCH") if necessary.
2) Remove the Ⓐ, Ⓑ, Ⓒ and Ⓓ screws then remove the LOADING DRIVE BLOCK as shown in Fig. 4-7.

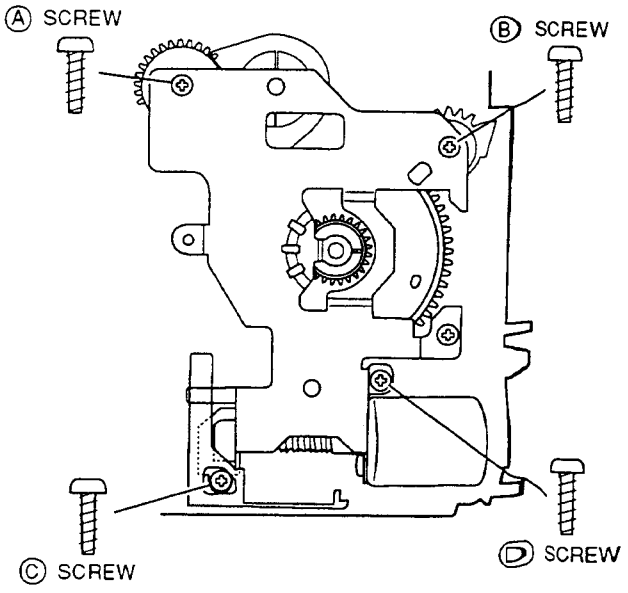



Fig. 4-7

### 4-2-2. Removal of the LOADING ARM BLK

1) Release the stopper on the right side end of the LOADING ARM BLK's shaft (refer to Fig. 4-4) by pressing the stopper tab with a flat head (—) screwdriver. Then remove the shaft's right end from the bracket.

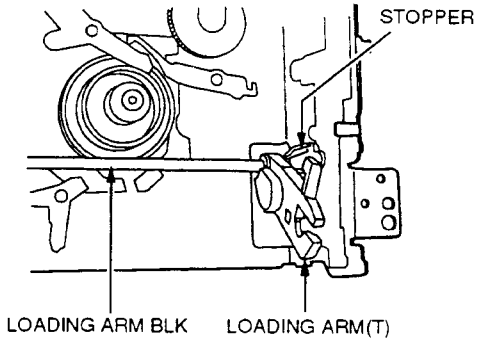



Fig. 4-4

2) Hold the LOADING ARM (T) and then pull out the shaft's left end from the bracket. Take special care when removing it to avoid damaging the pins (refer to Fig. 4-4).

### 4-2-3. Reassembling

1) Proceed in the reverse order of 4-2-1 to 4-2-2 for installation.

## 4-3. REMOVAL OF THE MODE DETECT SWITCH

Before proceeding with removal of the MODE DETECT SWITCH, the loading mechanism must be set to the "reference" position. If it has not already been set, use the following procedure to set the reference position.

※ Connect a 6 V battery to the loading motor until both the cam slider gear and mode detect switch reach the reference position (refer to Fig. 4-6).

### 4-3-1. Removal of the MODE DETECT SWITCH

1) Unsolder the 5 leads of the mode detect switch.

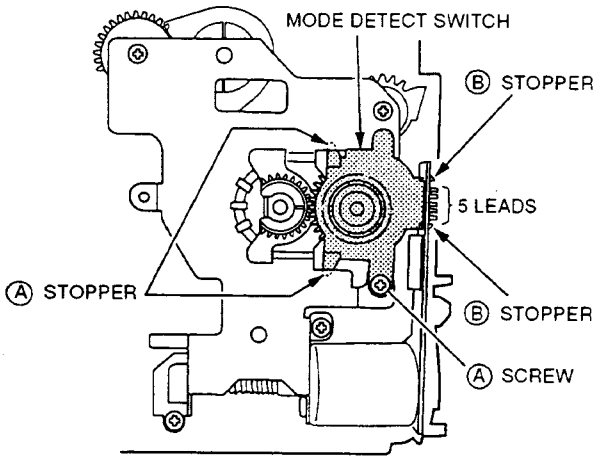



Fig. 4-5

2) Remove the Ⓐ screw.
3) While releasing the two Ⓐ stoppers and two Ⓑ stoppers, carefully remove the MODE DETECT SWITCH by pulling it up and to the left.

### 4-3-2. Installation of the MODE DETECT SWITCH

1) Install the mode detect switch in the reverse order of 4-3-1. When mounting the mode detect switch, align the mode detect switch's Ⓐ mark with the Ⓑ mark on the cam slider gear as shown in Fig. 4-6.

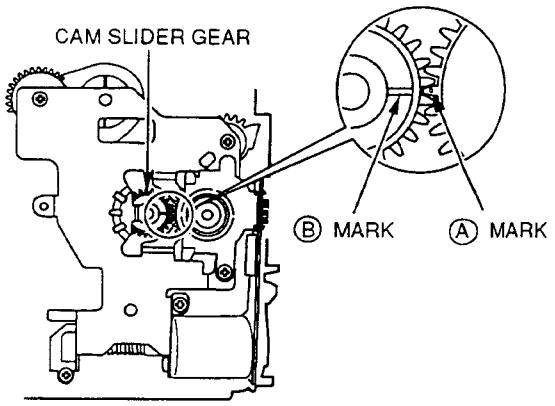



Fig. 4-6

## 4-4. DISASSEMBLY OF THE LOADING DRIVE BLOCK

※ Set the loading mechanism to the "reference" position. Refer to 4-3, "REMOVAL OF THE MODE DETECT SWITCH" before proceeding.

### 4-4-1. Removal of the LOADING DRIVE BLOCK

1) Remove the MODE DETECT SWITCH (refer to 4-3-1 "removal of the MODE DETECT SWITCH") if necessary.
2) Remove the Ⓐ, Ⓑ, Ⓒ and Ⓓ screws then remove the LOADING DRIVE BLOCK as shown in Fig. 4-7.

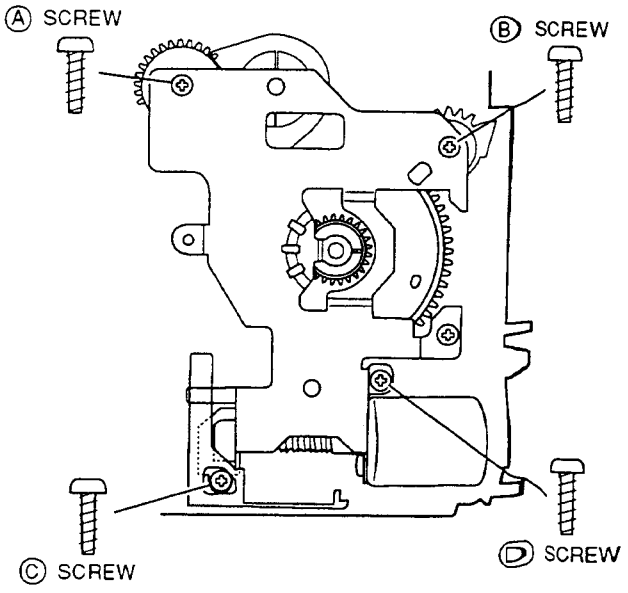



Fig. 4-7

### 4-4-2. Replacement of the LOADING MOTOR

1) Remove the LOADING DRIVE BLOCK (refer to 4-4-1)
2) Unsolder the two leads of the LOADING MOTOR.
3) Remove the two installation screws.

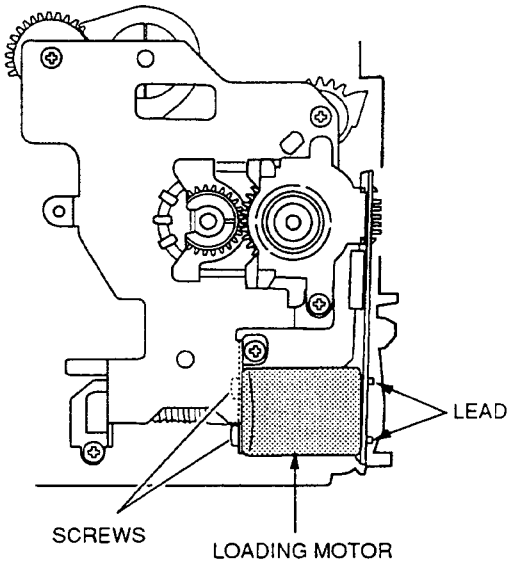



Fig. 4-8

4) Reassemble in the reverse order for installation.

## 4-5. REASSEMBLY OF THE LOADING MECHANISM BLK

### 4-5-1. Position of the TOGGLE GEARs (T) and (S)

1) Set the TOGGLE GEARs (T) and (S) to the unloaded position with your fingers. Align the Ⓐ mark on the TOGGLE GEAR (S) with the Ⓐ hole of the TOGGLE GEAR (T) as shown in Fig. 4-9.

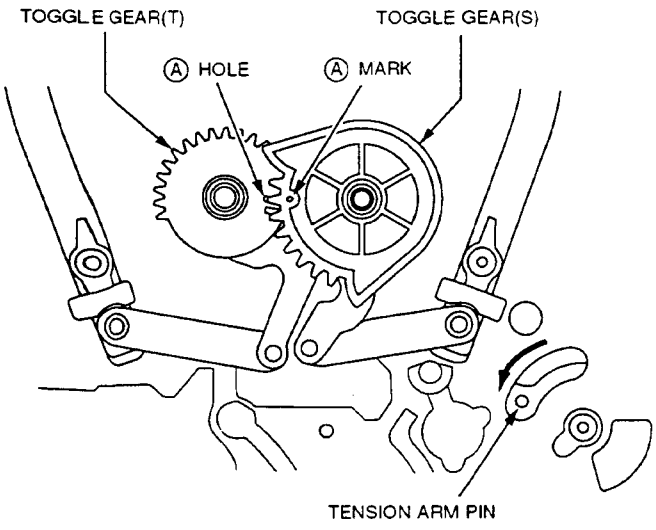



Fig. 4-9

**NOTE :** When positioning the TOGGLE GEAR (S), the TENSION ARM's pin should be moved in the direction of the arrow before placing the TOGGLE GEAR (S) onto its shaft.

### 4-5-2. Installation of the CAM SLIDER GEAR & FRONT LOADING GEAR

1) Attach the WORM WHEEL GEAR as shown in Fig. 4-10.

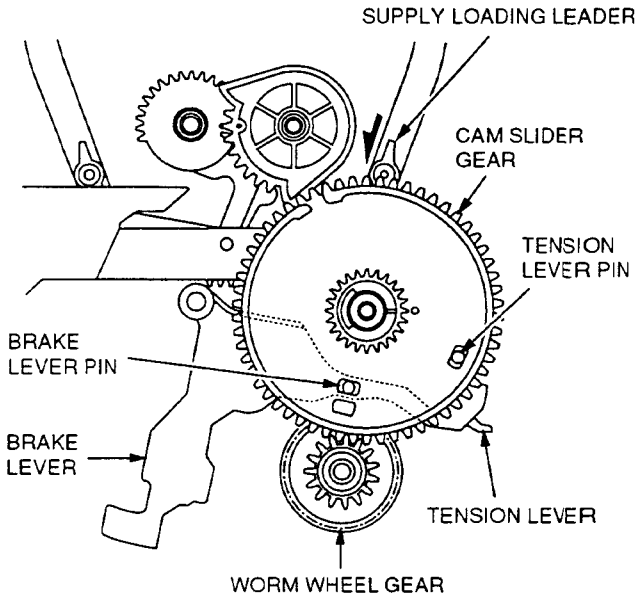



Fig. 4-10

2) Place the CAM SLIDER GEAR on the shaft and adjust the position of the BRAKE LEVER and TENSION LEVER so that both pins appear through the holes on the CAM SLIDER GEAR as shown in Fig. 4-10. When inserting the CAM SLIDER GEAR onto its shaft, press the SUPPLY LOADING GEAR slightly in the direction of the arrow to make installation easy.
3) Attach the FRONT LOADING GEAR so that the Ⓐ mark on the FRONT LOADING GEAR aligns with the Ⓑ mark on the FRONT LOADING SLIDER and that the Ⓒ mark on the FRONT LOADING GEAR aligns with the Ⓓ mark on the CAM SLIDER GEAR as shown in Fig. 4-11.

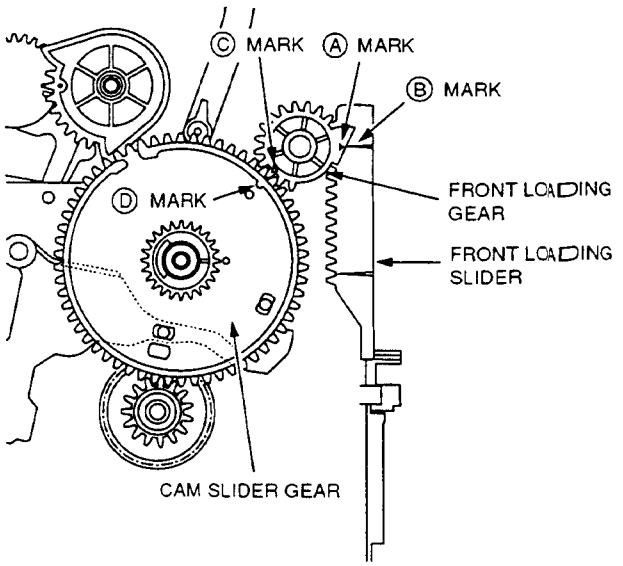



Fig. 4-11

### 4-5-3. Installation of the LOADING BLOCK & MODE DETECT SWITCH

1) Install the LOADING DRIVE BLOCK as shown in Fig. 4-12. Align the Ⓐ mark on the MODE DETECT SWITCH's gear with the Ⓑ mark on the CAM SLIDER GEAR when installing.

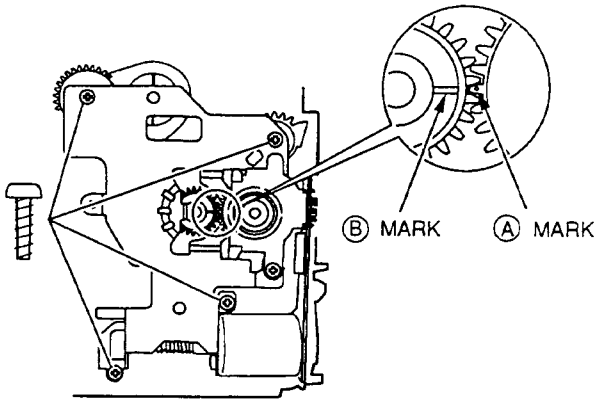



Fig. 4-12

## 4-6. REPLACEMENT OF THE PINCH ROLLER BLOCK

1) Remove the Ⓐ spring, then remove the PINCH ROLLER ARM BLOCK by turning it in the direction of the arrow and pulling it upward as shown in Fig. 4-13.

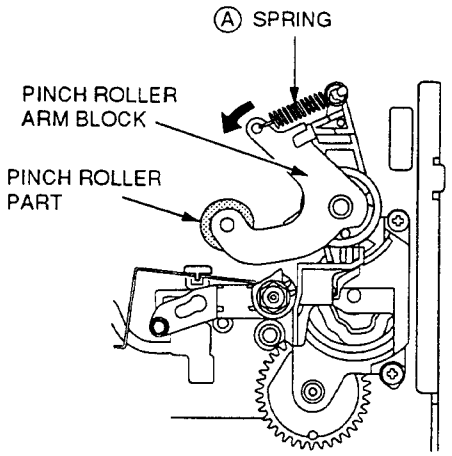



Fig. 4-13

2) Reassemble in the reverse order for installation.

## 4-7. DISASSEMBLY OF THE PINCH LEVER & PINCH HOLDER

### 4-7-1. Removal of the PINCH LEVER and PINCH HOLDER

1) Remove the two Ⓐ screws then remove the PINCH LEVER and PINCH HOLDER.

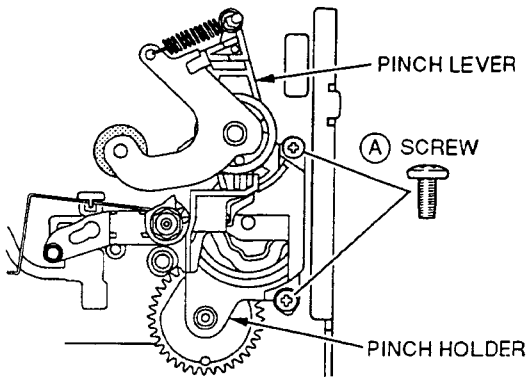



Fig. 4-14

### 4-7-2. Installation of the PINCH LEVER and PINCH HOLDER

1) Align the Ⓐ hole on the PINCH SLIDER with the Ⓐ mark on the PINCH GEAR through the hole on the chassis as shown in Fig. 4-15.

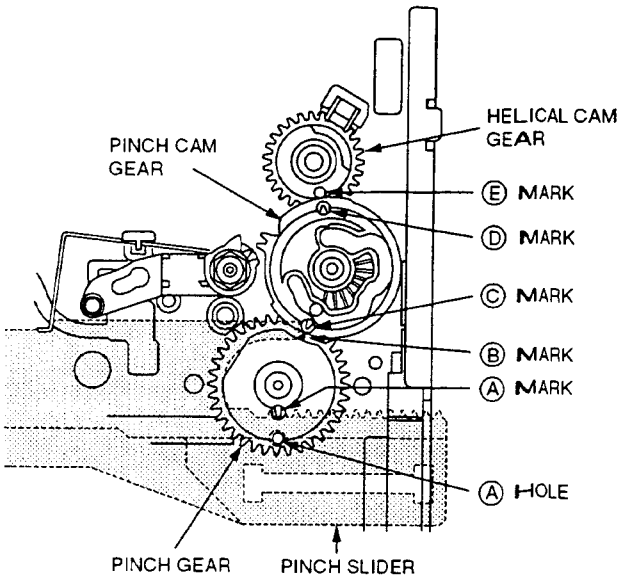



Fig. 4-15

2) Align the Ⓑ mark on the PINCH GEAR with the Ⓒ mark on the PINCH CAM GEAR and the Ⓓ mark on the PINCH CAM GEAR with the Ⓔ mark on the HELICAL CAM GEAR as shown in Fig. 4-15.
3) Install the PINCH LEVER and PINCH HOLDER in the reverse order.

## 4-8. DRUM MOTOR PC BOARD REPLACEMENT

1) Remove the two Ⓐ screws on the ROTARY PLATE and then remove it. (If the PRE AMP PCB is not removed yet, remove it first before removing the Ⓐ screws. Refer to 4-1-1, "Removal of the PRE AMP PCB.)

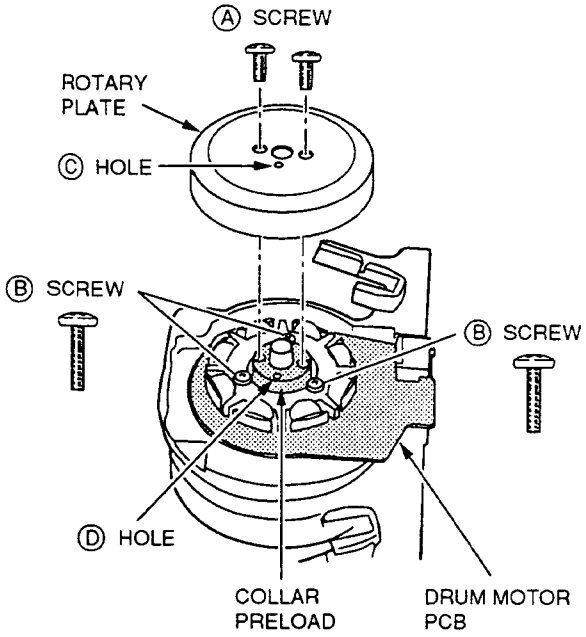


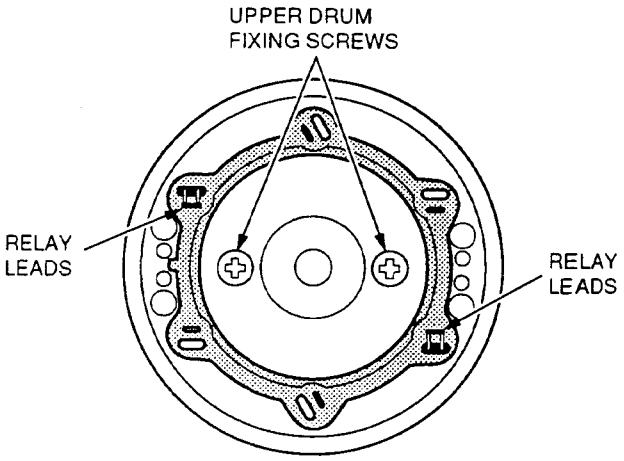

Fig. 4-16

2) Remove the three Ⓑ screws which retain the DRUM MOTOR PCB and replace it.
3) Attach the ROTARY PLATE to the collar preload so that the rotary plate Ⓒ hole and collar preload Ⓓ hole line up.
4) After replacement, PB switching point adjustment (INFORMATION, PRESET IN THE TEST MODE, #3) is absolutely necessary for the proper performance.

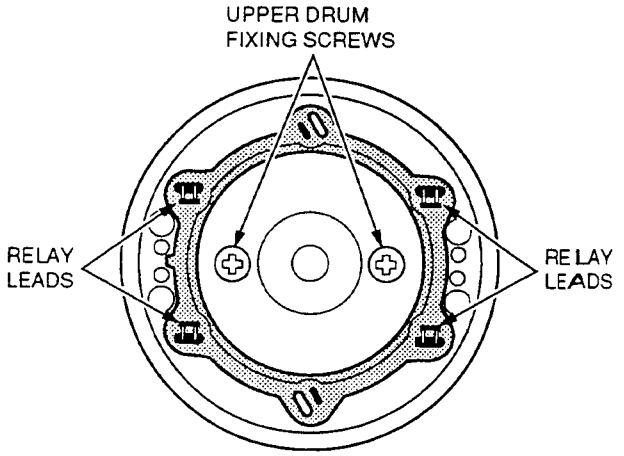
## 4-9. REPLACEMENT OF THE UPPER DRUM

### 4-9-1. Removal of the UPPER DRUM

1) Unsolder the relay leads and remove the two upper drum fixing screws as shown in Fig. 4-17.




[For 2 head models]




[For 4 head models]

Fig. 4-17

2) Gently lift and remove the UPPER DRUM.

### 4-9-2. Installation of the UPPER DRUM

**[For 2 head models]**

Attach the UPPER DRUM to the LOWER DRUM ROTOR so that the upper drum convex Ⓐ and lower drum rotor's white PCB line up as shown in Fig. 4-18.

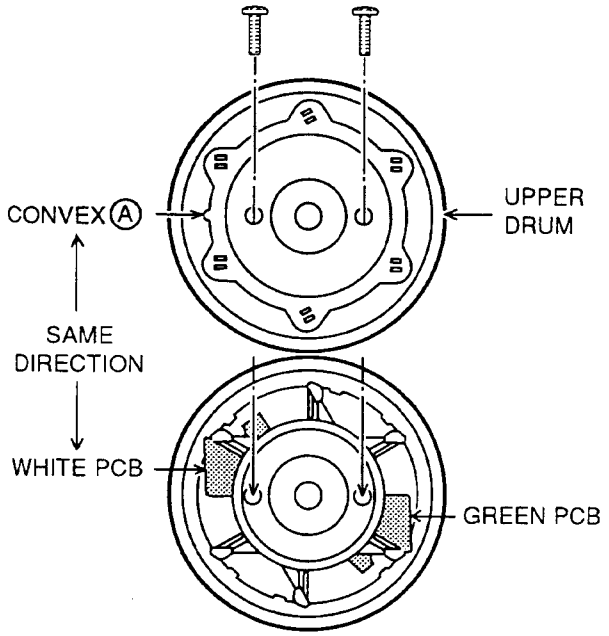



Fig. 4-18

**[For 4 head models]**

Attach the UPPER DRUM to the LOWER DRUM ROTOR, so that the upper drum convex Ⓐ and lower drum rotor's white mark line up, as shown in Fig. 4-19.

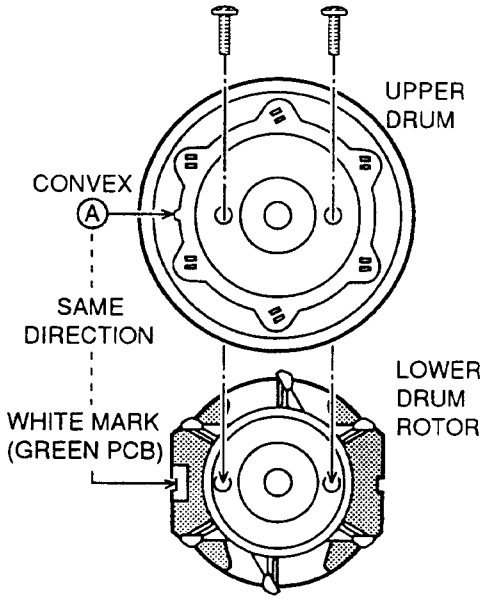



Fig. 4-19

**NOTE** : Because height precision is required for proper performance, and because head tips are fragile, the following points should be noted when replacing the UPPER DRUM BLOCK.

(a) Do not loosen the set screw on the collar preload.
(b) Before fixing, use alcohol to clean both surfaces where the upper drum and the rotary transformer meet.
(c) If the UPPER DRUM can not be inserted on to the shaft easily during installation, clean the hole in the UPPER DRUM with alcohol and put a little oil on the shaft.
(d) Make sure that the upper drum fixing screw holes, on the rotary transformer part, and the upper drum fixing screw penetration holes match exactly before inserting the fixing screws.
(e) Tighten the two upper drum fixing screws alternately and gradually.

### 4-9-3. After replacement

After replacement, the following adjustments are necessary for the proper performance.

1) Control head phase adjustment. (MECHANICAL ADJUSTMENT 5-3-2.)
2) PB switching point adjustment. (INFORMATION, PRESET IN TEST MODE #3)
3) ENV. DET (I-HQ) adjustment. (INFORMATION, PRESET IN THE TEST MODE #4)

# V. MECHANICAL ADJUSTMENT

## 5-1. BACK TENSION ADJUSTMENT

1) Prepare a video cassette tape which you no longer need. Remove both tape reels and the tape protection cover from the cassette tape. Next, cover the video cassette's left and right detection holes with black adhesive tape.
2) Engage the playback mode using with a tapeless tape.
3) Confirm the distance between the three marks (lines) on the TENSION ARM and the Ⓐ mark on the MECHA. CHASSIS so that the Ⓐ mark aligns with the center line on the TENSION ARM as shown in Fig. 5-1.
4) If the result is not satisfactory, eject the tape and adjust the TENSION ADJUST repeatedly until a satisfactory result is achieved.

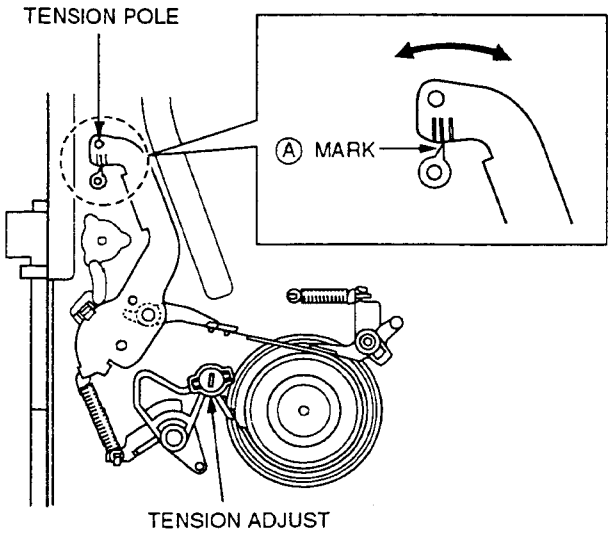



Fig. 5-1

## 5-2. TAPE TRANSPORT ADJUSTMENTS

In order to simplify the adjustment, two long square holes are made on the mechanism chassis. These holes should be used for their reflection image on the tape. If the shape of the reflection image on the tape is straight and not distorted, this means correct tape transport adjustment is achieved.

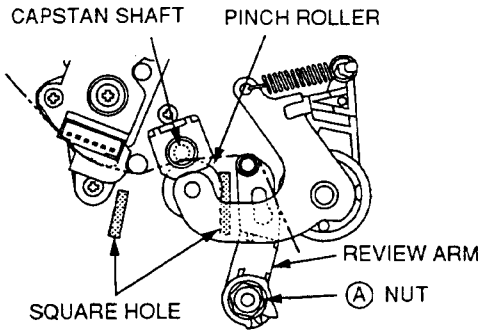



Fig. 5-2

**NOTE** : The following adjustments are required only when an irregularity is found, since these adjustments are precisely set at the factory.

### 5-2-1. Tape curl adjustment at the TAKE-UP TAPE GUIDE

1) Play back a recorded tape which is no longer needed.
2) Turn the Ⓐ screw on the A/C HEAD BLK, until the edge of the tape barely touches the lower part of the TAKE UP TAPE GUIDE, without any curl or wrinkle.

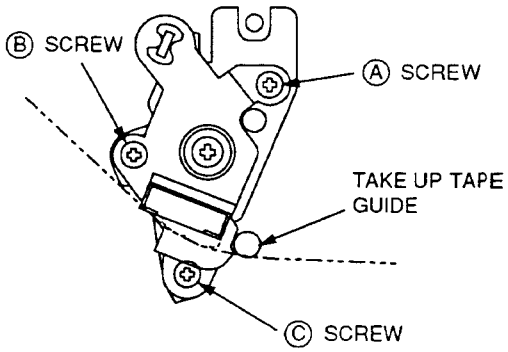



Fig. 5-3

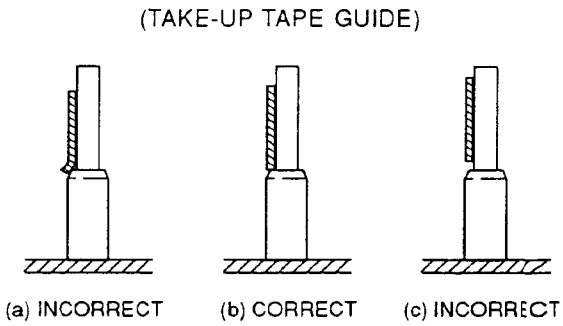



Fig. 5-4

3) Observe the reflection image of the square hole on the tape. If the shape is incorrect, proceed adjustment until satisfactory result is obtained.

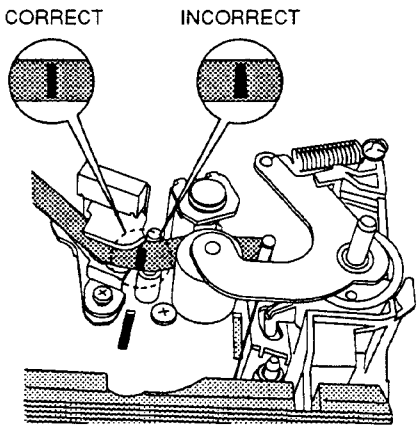
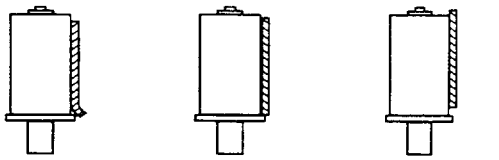



Fig. 5-5

4) Once the Ⓐ screw is adjusted, A/C HEAD height and azimuth adjustment is required. (Refer to 5-3 A/C HEAD POSITION ADJUSTMENT.)

### 5-2-2. Tape curl adjustment at the SUPPLY TAPE GUIDE

Confirm that the lower edge of the tape barely touches the lower part of the SUPPLY TAPE GUIDE, without any curl or wrinkle as shown in Fig. 5-6. If necessary, bend the neck part of the TENSION ARM in the Ⓐ or Ⓑ direction slightly until a satisfactory result is achieved.



(a) INCORRECT (b) CORRECT (c) INCORRECT

Fig. 5-6

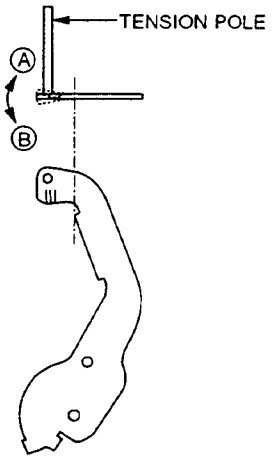



Fig. 5-7

### 5-2-3. REVIEW ARM height adjustment

1) Play back an E-180 (or TF-526HH test tape) tape.
2) Turn the REVIEW ARM height Ⓐ nut in the clockwise direction until the reflection image of the long square hole on the tape is distorted. (Refer to Fig. 5-2 and Fig. 5-8.)

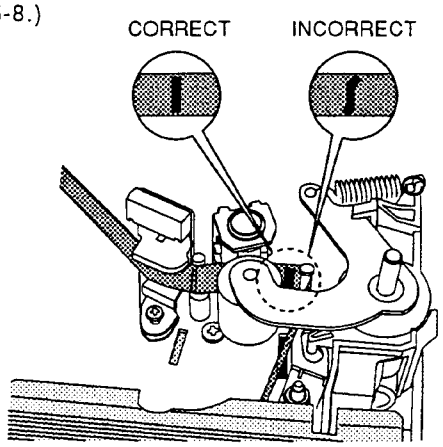



Fig. 5-8

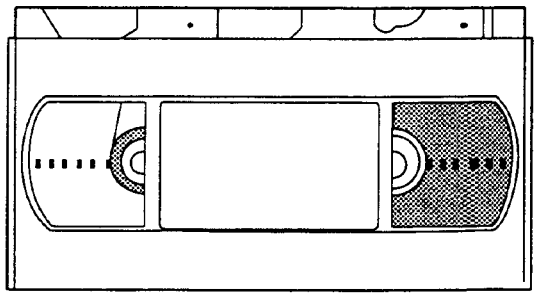
3) Turn the Ⓐ nut in the counter-clockwise direction little by little until the reflection image on the tape is satisfactorily shaped. Confirm that the edge of the tape barely touches the lower part of the TAKE-UP TAPE GUIDE without any curl or wrinkle among the TAKE-UP TAPE GUIDE, CAPSTAN SHAFT and REVIEW ARM.

### 5-2-4. A/C HEAD height adjustment

1) Play back test tape TF-526HH (Part No. : AT-751788).
2) Connect an oscilloscope to the AUDIO OUT terminal on the rear panel .
3) Slightly turn the © screw so that the output level is between 30 ~ 80 mVp-p. (refer to Fig. 5-3.)
4) Slightly turn the Ⓐ screw until the tape edge barely touches the lower part of the TAKE-UP TAPE GUIDE without any curl or wrinkle as shown in Fig. 5-4.
5) Confirm whether the output level is still between 30 ~ 80 mVp-p or not. If the result is not satisfactory, repeat steps 3) to 5).
6) Check the reflection image on the tape again. If the shape of the image is not satisfactorily, repeat the adjustment from 5-2-3 to 5-2-4 until satisfactory result is obtained.

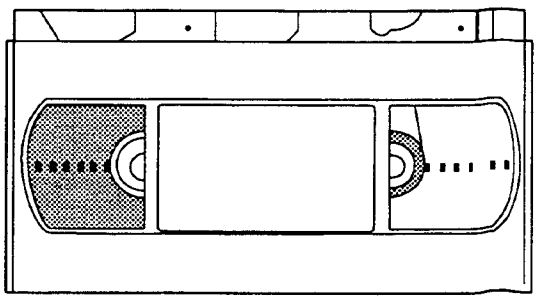
### 5-2-5. CUE/REVIEW check

1) Play back the last part of an E-240 tape and set the unit to the REVIEW mode by pressing the REW button. (Remove the tape protection cover to make the adjustment easier.)



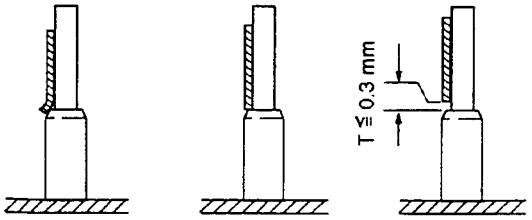
(REVIEW mode)
Fig. 5-9

2) Confirm there is no curl or wrinkle among the TAKE-UP TAPE GUIDE, CAPSTAN SHAFT and REVIEW ARM. Also, the reflection image of the long square hole on the tape should be satisfactorily shaped.
If the result is not satisfactory, repeat the adjustment from 5-2-3 to 5-2-4.
3) Play back the beginning part of an E-240 tape and this time set the unit to the CUE mode by pressing the F. FWD button.



(CUE mode)
Fig. 5-10

4) Confirm there is no curl or wrinkle near the REVIEW ARM's guide. If curl or wrinkle of the tape occurs, slightly turn the Ⓐ nut (Shown in Fig. 5-2) until it disappears.
5) Set the unit to the REVIEW mode again. Then confirm that there is no curl or wrinkle near the TAKE-UP TAPE GUIDE. (A small gap may appear after this adjustment, but this is allowable.)




(a) INCORRECT (b) CORRECT (c) CORRECT

Fig. 5-11

**NOTE :**

1. If the results are not satisfactory, repeat steps 2) to 5).
2. Always play an undamaged tape to obtain satisfactory adjustment.
3. Because an E-240 tape can be damaged easily, due of its thinness, a pre-adjustment with an E-180 tape is recommended.

### 5-2-6. LOADING LEADER height adjustments

1) Slightly loosen the set screw at the lower part of the LOADING LEADERs (L), (R) so that the LOADING LEADER can be adjusted with reasonable tightness. (Refer to Fig. 5-12.)

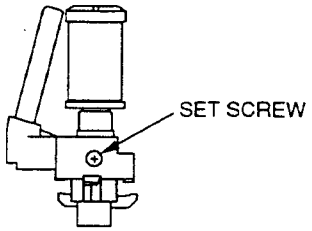



Fig. 5-12

2) Play back the reference tape TF-530RFS (Part No. : AT-751775).
3) Connect an oscilloscope's CH-1 to the TP851 (ENVE) on the PRE AMP PCB and CH-2 to the TP852 (V-SWP) for triggering.
4) Turn the LOADING LEADER heads with a flat head(–) screw driver to obtain a flat RF envelope as the ideal envelope, as shown in Fig. 5-13.
5) After adjustment is completed, tighten the loading leader set screws.

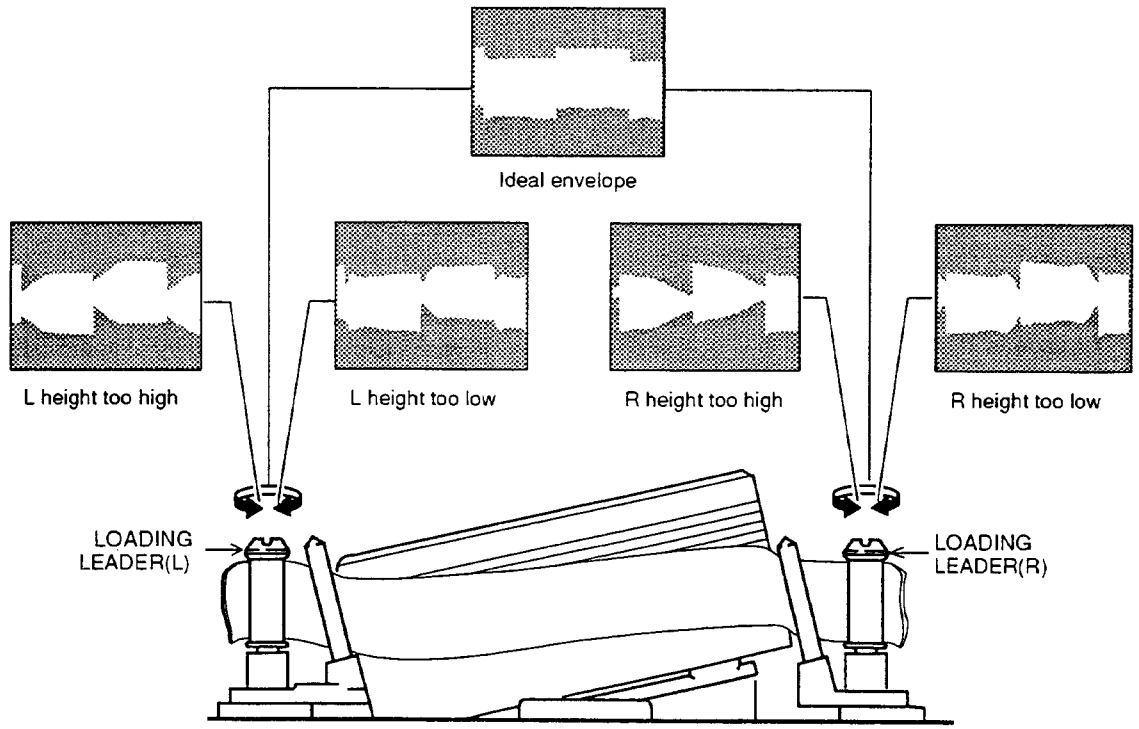



Fig. 5-13

## 5-3. A/C HEAD POSITION ADJUSTMENT

※ Refer to Fig. 5-3 for the adjustment points.

### 5-3-1. Azimuth adjustment

1) Connect an AC voltmeter or an oscilloscope to the AUDIO OUT terminal on the rear panel.
2) Play back the reference tape TF-530RFS (Part No. : AT-751775).
3) Adjust the Ⓑ screw to obtain the maximum audio output.

### 5-3-2. Tracking adjustment

1) Engage the "TEST MODE" (refer to "INFORMATION", PRESET IN THE TEST MODE #1).
2) Connect CH-1 of an oscilloscope to the TP851 (ENVE) on the PRE AMP PCB and CH-2 to the TP852 (SWP) for triggering.
3) Play back the reference tape TF-530RFS (Part No.: AT-751775). Check the seconds display of the FL display so that "1F" (centre position in the tracking range) is indicated at this point. If not displayed, press the "<" or ">" button on the remote control until "1F" is indicated.
4) Loosen the Ⓒ screw slightly so that the A/C HEAD BASE can be moved with reasonable tightness.

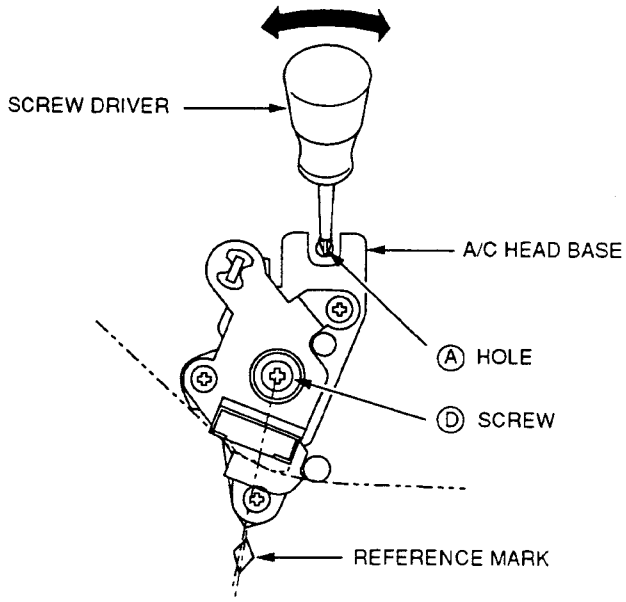



Fig. 5-14

5) Insert a philips type screwdriver into the A/C HEAD BASE and Ⓐ hole as shown in Fig. 5-14
6) Move the A/C HEAD BASE by moving a screwdriver in the direction of the arrow as shown in Fig. 5-14 to obtain the maximum RF output, then tighten the Ⓓ screw. Although there are a few points at which the RF output becomes maximum, the pointed head of the A/C HEAD BASE must be positioned as close to the reference mark as possible.
7) Eject the tape and then re-insert it and play it back again. Confirm that the RF output is maximum after the auto tracking control has been activated. Next, press the "<" or ">" button on the remote control alternately and confirm that the RF output is maximum at the tracking centre position. If the result is not satisfactory, repeat the adjustment steps 3) to 6). (This adjustment is very important as this affects the interchangeability of the recorded tapes.)

# VI. PARTS LIST

**ATTENTION**

1. When placing an order for parts, be sure to list the Part No., Model No. and the description of earch part. Otherwise, the non-delivery of the part or the delivery of a wrong part may result.
2. Please make sure that Part No. is correct when ordering. If not, a part different from the one you ordered may be delivered.
3. Since the parts shown in Parts List or Preliminary Service Manual may have been the subject of changes, please use this Parts List for all future reference.

## HOW TO USE THIS PARTS LIST

1. This Parts List lists those parts which are considered necessary for repairs. Other common parts, such as resistors and capacitors, are listed in the "Common List for Service Parts" from which these parts should be selected and stocked.
2. The Recommended Spare Parts List shows those parts in the Parts List which are considered particularly important for service.
3. Parts not shown in the Parts List and "Common List for Service Parts" will not in principle be supplied.
4. How to read the Parts List.

a) Mechanism Block

**2. HEAD BASE BLOCK**

| Ref. No. | Part. No. | Description |
|---|---|---|
| 1 | BH-T2023A320A | HEAD BASE BLOCK |
| 2 | HP-H2206A010A | HEAD R/P PR4-8FU C |
| 3 | ZS-477876 | PAN20×03STL CMT |
| 4 | ZS-536488 | BID20×08STL CMT |
| 5 | ZG-402895 | SP CS ANGLE ADJUST |

SP (Service Parts) Classification

This number corresponds with the individual parts index number in the figure.

b) PC Board

**2. MAIN PC BOARD**

| Ref. No. | Part. No. | Description |
|---|---|---|
| IC1 | EI-324536 | IC HD14049BP |
| IC2 | EI-336801 | IC MB8841-564M |
| C1A | EC-338399 | C MMY V 223M 250AC [U,E,B,S] |
| C1B | EC-350949 | C MMY V 223M 250DC [J] |
| C1C | EC-338397 | C MMY V 223M 125AC [C,A] |
| X1 | EI-318384 | OSC X'TAL NC-18C |

Symbols for primary destination
[A] : AAL (U.S.A) [S] : SAA (Australia)
[B] : BEAB (England) [U] : U/T (Universal Area)
[C] : CSA (Canada)
[E] : CEE (Europe) [V] : VDE (Germany)
[J] : JPN (Japan) [Y] : Custom

SP (Service Parts) Classification

These reference symbols correspond with component symbols in the Schematic Diagrams.

The available PC Board Blocks are listed separately.

5. When Part No. is known, Parts Index at end of Parts List can be used to locate where that part is shown in Parts List by its Reference No. listed at right of Part No.

**WARNING**

⚠ INDICATES SAFETY CRITICAL COMPONENTS. FOR CONTINUED SAFETY, REPLACE SAFETY CRITICAL COMPONENTS ONLY WITH MANUFACTURE'S RECOMMENDED PARTS.

**AVERTISSEMENT**

⚠ IL INDIQUE LES COMPOSANTS CRITIQUES DE SÉCURITÉ. POUR MAINTENIR LE DEGRÉ DE SÉCURITÉ DE L'APPAREIL, NE REMPLACER QUE DES PIÈCES RECOMMANDEES PAR LE FABRICANT.

## 1. RECOMMENDED SPARE PARTS

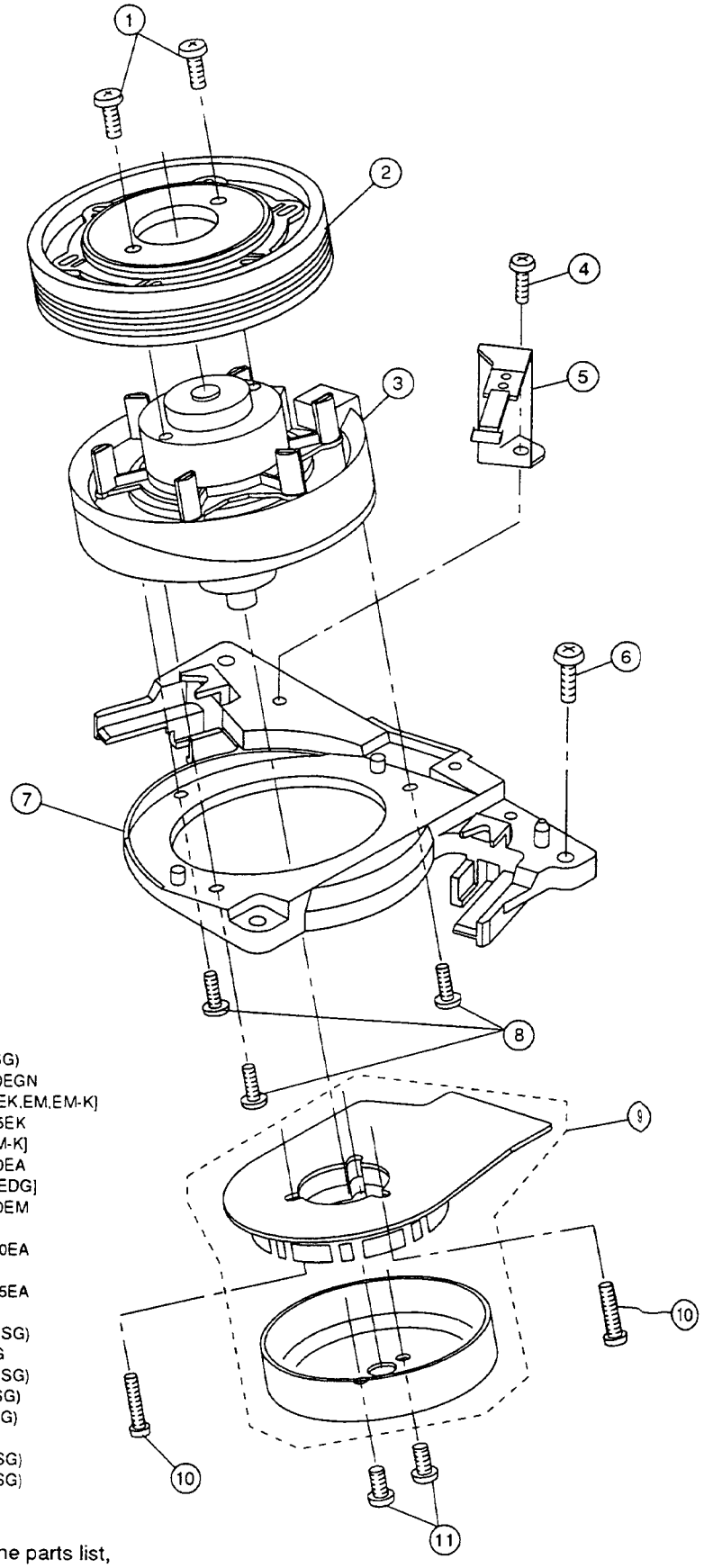
We suggest you to stock the following Recommended Spare Part items listed below since they can cover most of the routine service.

| Ref. No. | Part No. | Description |
|---|---|---|
| 1 | BB-428300N | MECHA DECK GXS |
| 2 | BL-424913N06 | ARM LOADING BLK G204EA |
| 3 | BL-428114N1 | ARM PINCH ROLLER(2)PART |
| 4 | BM-433066N1 | MOTOR E20XL16 |
| 5 | BM-421746N1 | MOTOR PART |
| 6 | BM-428250N2 | MOTOR SCV-0604A |
| 7 | ⚠ BT-432834N | TRANS POW V1222 EM [EM,EM-K] |
| 8 | ⚠ BT-433085N | TRANS POW V1222EA-TM [EXCEPT EM,EM-K] |
| 9 | BV-424919N09 | CASSETTE LOAD BLK G204EA |
| 10 | BV-424914N03 | LEADER(S) BLK G204EA |
| 11 | BV-424915N04 | LEADER(T) BLK G204EA |
| 12 | BV-425222N | RF CONVER. YAA21-1001G G/K EDG [EDG] |
| 13 | BV-427963N | RF CONVER. YAA211031G G/I/K EDI [EM-K] |
| 14 | BV-387611N | RF CONVERTER YAA21-0808G EV [EM] |
| 15 | BV-387610N | RF CONVERTER YAA21-0809G EA [EA] |
| 16 | BV-429839N | RF CONVERTER YAA21-1045H G EO [EO,EOH,EOG] |
| 17 | BV-429837N | RF CONVERTER YAA21-1046H I EK [EK] |
| 18 | BV-V1205D410A | TL LOWER DRUM BLK G220EA [2HEADS MODEL] |
| 19 | BV-V1182D410C | TL LOWER DRUM BLK G415EA [4HEADS MODEL] |
| 20 | BV-V1182D420A | TL UPPER DRUM BLK G215EK [2HEADS MODEL EK,EM,EM-K] |
| 21 | BV-V1182D420C | TL UPPER DRUM BLK G420EA [4HEADS MODEL EXCEPT EDG] |
| 22 | BV-V1205D420A | TL UPPER DRUM BLK G420EM [4HEADS MODEL EDG] |
| 23 | BV-V1123D420A | TL UPPER DRUM BLK X400EGN [2HEADS MODEL EXCEPT EK,EM,EM-K] |
| 24 | ⚠ EC-416655N | C DBL LAYER T05 FM0H473Z 5.5DC |
| 25 | ED-390012N | D LED GL4800 INFRARED |
| 26 | ED-422251N | D LED GL528VTB INFRARED T05 |
| 27 | ED-425369J | D SCHOTTKY AK03V0 T26 |
| 28 | ED-428366N | D SCHOTTKY ERB83-004L6 S12 |
| 29 | ED-428367N | D SCHOTTKY ERB84-009L6 S12 |
| 30 | ⚠ ED-427506N | D SILI.ERA22-10 T26 1000/0.5A |
| 31 | ED-307573N | D SILICON H 1SS131T-77 T26 [EDG,EOH,EOG] |
| 32 | ED-428420J | D SILICON RL103F-N02T05 200/1A [EXCEPT EM,EM-K] |
| 33 | ED-401046J | D SILICON RL104F-E T26 400/1A [EM,EM-K] |
| 34 | ED-403280N | D SILICON 1N4002N02 T05 100/1A |
| 35 | ⚠ ED-418622N | D SILICON 1N4006N02 T05 800/1A |
| 36 | ED-422252N | D ZENER H HZS12A3L T26 |
| 37 | ED-394991N | D ZENER H HZS18-3 T26 [EM,EM-K] |
| 38 | ED-428384N | D ZENER H MTZJ15C T26 [EDG,EOH,EOG] |
| 39 | ED-425278N | D ZENER H MTZJ20A T26 [EXCEPT EM,EM-K] |
| 40 | ED-428383N | D ZENER H MTZJ3.0B T26 |
| 41 | ED-422519N | D ZENER H MTZJ4.3B T26 |
| 42 | ED-404242N | D ZENER H MTZJ5.6A T26 |
| 43 | ED-427218N | D ZENER H MTZJ6.2C T26 |
| 44 | ED-404220N | D ZENER H MTZJ9.1B T26 |
| 45 | EE-428336N | TV TUNER TEKB1-014A EK [G240/G245/G445EK] |
| 46 | EE-428206N | TV TUNER TEKE1-115A EGN [EM-K] |
| 47 | EE-432827N | TV TUNER TEKE1-147A EO [EO,G246EK] |
| 48 | EE-432823N | TV TUNER TEKE4-168A EOG [EDG,EOH,EOG] |
| 49 | EE-419189N | TV TUNER VTSH6AZ01 EA [EA] |
| 50 | EE-405638N | TV TUNER VTSS6CZ EM [EM] |
| 51 | ⚠ EF-394702N | FUSE 218 TIME 250V 2.00A |
| 52 | EI-425188N | IC BA7630S |
| 53 | EI-429904N | IC BA7631F |
| 54 | EI-430862N | IC BA7725S |
| 55 | EI-430864N | IC BU9252S |
| 56 | EI-419278N | IC LA7285M T2T32P |
| 57 | EI-428406N | IC LA7356M-TRM FPR T12E [EDG,EM,EM-K] |
| 58 | EI-432779N | IC LA7411M-TP-T1 FPT1T24P [2HEADS MODEL] |
| 59 | EI-432778N | IC LA7416M-TP-T1 FPT1T24P [4HEADS MODEL] |
| 60 | EI-432784N | IC LA7440M [EM-K] |
| 61 | EI-432781N | IC LA7447BM [EXCEPT EM-K] |
| 62 | EI-390053N | IC LA7910 [EXCEPT G245/G445EK] |
| 63 | EI-403233N | IC LB1641 |
| 64 | EI-433089N | IC LC89971-SK [EM-K] |
| 65 | EI-432780N | IC LC89975M-TE-R FPR T16E [EXCEPT EM-K] |
| 66 | EI-389471N | IC L5631 T05 |
| 67 | EI-432783N | IC MM1111XF FPB T12E [EXCEPT EOG,G245/G445EDG, G240EOH(E),G254EOH(Y1), G255/G455EOH] |
| 68 | EI-433103N | IC M37774M5H389GP NXGSYPS1 [EXCEPT EK,EOG] |
| 69 | EI-433099N | IC M37774M5H390GP NXGSYPV1 [EK] |
| 70 | EI-433100N | IC M37774M5H391GP NXGSYGS1 [EOG] |
| 71 | EI-368809N | IC M51496P |
| 72 | EI-353750N | IC NJM4558MB T1 T1T32P |
| 73 | EI-428401N | IC PST9130-T T05 |
| 74 | EI-428403N | IC SDA5649X FP T24E [EK,EOG,G245/G445EDG, G254/G255/G455EOH] |
| 75 | EI-422128N | IC TA76431S T05 |
| 76 | EI-422145N | IC UPD16312GB-3B4 |
| 77 | EI-422442N | IC 24LC02BT/SN FP T12E [EXCEPT G240EK/G245/G445EA/EDG/ EO/EOH,G246EA,G247EOG] |
| 78 | EI-431275N | IC 24LC04BT/SN FP T12E [G240EK/G245/G445EA/EDG/EO/EOH, G246EA,G247EOG] |
| 79 | EI-430866N | OSC CE CSB455E 455KHZ |
| 80 | EI-368829N | OSC CE CSB512P |
| 81 | EI-425240N | OSC X'TAL APS1011A 16.000MHZ |
| 82 | EI-431323N | OSC X'TAL C-002RX 32.768KHZ |
| 83 | EI-431006N | OSC X'TAL HC-49U GX 3.5795MH [EM-K] |
| 84 | EI-405660N | OSC X'TAL HC-49U 4.433619MHZ [EXCEPT EM-K] |
| 85 | EM-428381N | IND FL FV681G CHARACTER |
| 86 | ⚠ ER-408829N | R FUSE V T05 RF25SCVTP1/4W R11K |
| 87 | ⚠ ER-397385N | R FUSE V T05 RF25SCVTP1/4W R20K [EM,EM-K] |
| 88 | ⚠ ER-418648N | R FUSE V T05 RF25SCVTP1/4W R24K |
| 89 | ⚠ ER-400729N | R FUSE V T05 RF25SCVTP1/4W R47K |
| 90 | ⚠ ER-428204N | R FUSE V T05RF25SVTP 1/4W 220J |
| 91 | ES-426275N | SW MICRO ESE11SV1A |
| 92 | ES-419326N1 | SW MODE SELECT MMS00202ZMB0 |
| 93 | ES-428362N | SW TACT SKHHLV |
| 94 | ES-414593N | SW TACT SOR-142HS T05 |
| 95 | ET-432910N | DETECTOR GP1U271X |
| 96 | ⚠ ET-422113N | PHOTO COUPLER PS2561-1-V |
| 97 | ET-429899N | TR C.DTA144TKA T146 08 E [EM-K] |

| Ref. No. | Part No. | Description |
|---|---|---|
| 98 | ET-430868N | TR C.DTC114EKA T146T08E [EOG,G245/G445EDG,G240EOH(E), G254EOH(Y1),G255/G455EOH] |
| 99 | ET-428400N | TR C.DTC143EKA T146T08E |
| 100 | ET-429897N | TR C.DTC144EKA T146T08E [EA,EK,EO,EM,G240/G440EDG, G240/G241/G245/G445EOH(Y1)] |
| 101 | ET-433071N | TR C.DTC144TKA T146T08E [EM-K] |
| 102 | ET-428248N | TR C.2SA1037AK R,S T146T08E [EA,EK,EO,EM,EM-K] |
| 103 | ET-416932N | TR C.2SB709A R,S TXT08E |
| 104 | ET-432740N | TR C.2SC2480 T,S TXT08E |
| 105 | ET-428373N | TR C.2SD2318 E,U,V FPTLT16E |
| 106 | ET-416933N | TR C.2SD601A R,S TXT08E |
| 107 | ET-366753N | TR DTA114ES T05 |
| 108 | ET-364082N | TR DTA114TS T05 |
| 109 | ET-415140N | TR DTA115TS T05 |
| 110 | ET-386784N | TR DTA143TS T05 |
| 111 | ET-364291N | TR DTA144ES T05 [EK,EO,G240/G440EDG,G240/G241/G245/ G445EOH(Y1)] |
| 112 | ET-364023N | TR DTC114ES T05 |
| 113 | ET-364492N | TR DTC114TS T05 [EXCEPT EA,EM] |
| 114 | ET-354365 | TR DTC114YS |
| 115 | ET-361901N | TR DTC124ES T05 |
| 116 | ET-368786N | TR DTC143ZS T05 |
| 117 | ET-361961N | TR DTC144ES T05 |
| 118 | ET-373201N | TR DTC144TS T05 [EDG,EOH,EOG] |
| 119 | ⚠ET-427538N | TR FET 2SK2056 LBS2AKAI [EM,EM-K] |
| 120 | ET-390010N | TR PHOTO PT4800 |
| 121 | ET-390009N | TR PHOTO PT493F |
| 122 | ET-392746N1 | TR 2SA933AS R,S T05 [EA,EM] |
| 123 | ET-392663N | TR 2SC1740S R,S T05 [EDG,EOH,EOG] |
| 124 | ET-419014N | TR 2SC1741S Q,R T05 |
| 125 | ET-414816N | TR 2SC2668 Y T05 |
| 126 | ⚠ET-428407N | TR 2SC3616 M,L T05 [EM,EM-K] |
| 127 | ⚠ET-428371N | TR 2SC4908 [EXCEPT EM,EM-K] |
| 128 | ⚠ET-422129N | TR 2SD2132 U,V T05 [EXCEPT EM,EM-K] |
| 129 | ET-416697N | TR 2SD2396 J,K |
| 130 | EW-432812N | CORD FFC BD P1.25 L130 14P [2HEADS MODEL] |
| 131 | EW-422530J | CORD FFC BD P1.25 L150 18P [4HEADS MODEL] |
| 132 | HE-422168N | HEAD E HVFHF0040A |
| 133 | HR-416732N | HEAD COMBO HVMZA1201A |
| 134 | MB-420053N | BELT CAPSTAN |
| 135 | MI-420023N3 | ARM IDLER PART |
| 136 | MI-420038N4 | DISK CLUTCH PART |
| 137 | MI-420037N | DISK COUPLING |
| 138 | ML-420068N1 | ARM REVIEW PART |
| 139 | ML-426550N | ARM F/R COUPLING |
| 140 | ML-420170N | ARM LID OPENER |
| 141 | ML-420097N3 | ARM LOADING BRAKE |
| 142 | ML-420102N1 | ARM T.U BRAKE |
| 143 | ML-420006N2 | ARM TENSION PART |
| 144 | ML-428102N1 | LEVER CAM PINCH |
| 145 | ML-420099N2 | LEVER M BRAKE |
| 146 | ML-420133N2 | LEVER REC-S |
| 147 | ML-420416N3 | LEVER TENSION(1)PART |
| 148 | ML-420086N1 | MAIN BRAKE(S)PART |
| 149 | ML-420089N1 | MAIN BRAKE(T)PART |
| 150 | ML-420092N1 | REVIEW BRAKE PART |
| 151 | ML-420110N4 | SLIDER PINCH |
| 152 | ML-420100N3 | SLIDER TRIGGER |
| 153 | ML-428108N | STILL BRAKE PART |
| 154 | MR-420109N | HOLDER THRUST WORM |
| 155 | MR-420106N | PULLEY TRIGGER |
| 156 | MR-420022N | ROLLER IMPEDANCE |
| 157 | MT-424632N2 | DISK(2) PART |
| 158 | MZ-420064N1 | GEAR CAM HELICAL |
| 159 | MZ-420122N1 | GEAR CAM MAIN |
| 160 | MZ-428103N | GEAR CAM R-204 |
| 161 | MZ-420035N | GEAR COUPLING |
| 162 | MZ-420124N3 | GEAR FRONT LOADING |
| 163 | MZ-420067N | GEAR PINCH |
| 164 | MZ-424917N03 | GEAR TOGGLE (S) BLK G204EA |
| 165 | MZ-424916N04 | GEAR TOGGLE (T) BLK G204EA |
| 166 | MZ-420123N | GEAR WORM WHEEL |
| 167 | MZ-420132N3 | PRISM LED |
| 168 | MZ-420016N2 | TENSION BAND PART |
| 169 | ZG-420036N | SP PUSH COUPLING |
| 170 | ZG-420105N | SP TRIGGER |

| Ref. No. | Part No. | Description |
|---|---|---|
| 98 | ET-430868N | TR C.DTC114EKA T146T08E [EOG,G245/G445EDG,G240EOH(E), G254EOH(Y1),G255/G455EOH] |
| 99 | ET-428400N | TR C.DTC143EKA T146T08E |
| 100 | ET-429897N | TR C.DTC144EKA T146T08E [EA,EK,EO,EM,G240/G440EDG, G240/G241/G245/G445EOH(Y1)] |
| 101 | ET-433071N | TR C.DTC144TKA T146T08E [EM-K] |
| 102 | ET-428248N | TR C.2SA1037AK R,S T146T08E [EA,EK,EO,EM,EM-K] |
| 103 | ET-416932N | TR C.2SB709A R,S TXT08E |
| 104 | ET-432740N | TR C.2SC2480 T,S TXT08E |
| 105 | ET-428373N | TR C.2SD2318 E,U,V FPTLT16E |
| 106 | ET-416933N | TR C.2SD601A R,S TXT08E |
| 107 | ET-366753N | TR DTA114ES T05 |
| 108 | ET-364082N | TR DTA114TS T05 |
| 109 | ET-415140N | TR DTA115TS T05 |
| 110 | ET-386784N | TR DTA143TS T05 |
| 111 | ET-364291N | TR DTA144ES T05 [EK,EO,G240/G440EDG,G240/G241/G245/ G445EOH(Y1)] |
| 112 | ET-364023N | TR DTC114ES T05 |
| 113 | ET-364492N | TR DTC114TS T05 [EXCEPT EA,EM] |
| 114 | ET-354365 | TR DTC114YS |
| 115 | ET-361901N | TR DTC124ES T05 |
| 116 | ET-368786N | TR DTC143ZS T05 |
| 117 | ET-361961N | TR DTC144ES T05 |
| 118 | ET-373201N | TR DTC144TS T05 [EDG,EOH,EOG] |
| 119 | ⚠ET-427538N | TR FET 2SK2056 LBS2AKAI [EM,EM-K] |
| 120 | ET-390010N | TR PHOTO PT4800 |
| 121 | ET-390009N | TR PHOTO PT493F |
| 122 | ET-392746N1 | TR 2SA933AS R,S T05 [EA,EM] |
| 123 | ET-392663N | TR 2SC1740S R,S T05 [EDG,EOH,EOG] |
| 124 | ET-419014N | TR 2SC1741S Q,R T05 |
| 125 | ET-414816N | TR 2SC2668 Y T05 |
| 126 | ⚠ET-428407N | TR 2SC3616 M,L T05 [EM,EM-K] |
| 127 | ⚠ET-428371N | TR 2SC4908 [EXCEPT EM,EM-K] |
| 128 | ⚠ET-422129N | TR 2SD2132 U,V T05 [EXCEPT EM,EM-K] |
| 129 | ET-416697N | TR 2SD2396 J,K |
| 130 | EW-432812N | CORD FFC BD P1.25 L130 14P [2HEADS MODEL] |
| 131 | EW-422530J | CORD FFC BD P1.25 L150 18P [4HEADS MODEL] |
| 132 | HE-422168N | HEAD E HVFHF0040A |
| 133 | HR-416732N | HEAD COMBO HVMZA1201A |
| 134 | MB-420053N | BELT CAPSTAN |
| 135 | MI-420023N3 | ARM IDLER PART |
| 136 | MI-420038N4 | DISK CLUTCH PART |
| 137 | MI-420037N | DISK COUPLING |
| 138 | ML-420068N1 | ARM REVIEW PART |
| 139 | ML-426550N | ARM F/R COUPLING |
| 140 | ML-420170N | ARM LID OPENER |
| 141 | ML-420097N3 | ARM LOADING BRAKE |
| 142 | ML-420102N1 | ARM T.U BRAKE |
| 143 | ML-420006N2 | ARM TENSION PART |
| 144 | ML-428102N1 | LEVER CAM PINCH |
| 145 | ML-420099N2 | LEVER M BRAKE |
| 146 | ML-420133N2 | LEVER REC-S |
| 147 | ML-420416N3 | LEVER TENSION(1)PART |
| 148 | ML-420086N1 | MAIN BRAKE(S)PART |
| 149 | ML-420089N1 | MAIN BRAKE(T)PART |
| 150 | ML-420092N1 | REVIEW BRAKE PART |
| 151 | ML-420110N4 | SLIDER PINCH |
| 152 | ML-420100N3 | SLIDER TRIGGER |
| 153 | ML-428108N | STILL BRAKE PART |
| 154 | MR-420109N | HOLDER THRUST WORM |
| 155 | MR-420106N | PULLEY TRIGGER |
| 156 | MR-420022N | ROLLER IMPEDANCE |
| 157 | MT-424632N2 | DISK(2) PART |
| 158 | MZ-420064N1 | GEAR CAM HELICAL |
| 159 | MZ-420122N1 | GEAR CAM MAIN |
| 160 | MZ-428103N | GEAR CAM R-204 |
| 161 | MZ-420035N | GEAR COUPLING |
| 162 | MZ-420124N3 | GEAR FRONT LOADING |
| 163 | MZ-420067N | GEAR PINCH |
| 164 | MZ-424917N03 | GEAR TOGGLE (S) BLK G204EA |
| 165 | MZ-424916N04 | GEAR TOGGLE (T) BLK G204EA |
| 166 | MZ-420123N | GEAR WORM WHEEL |
| 167 | MZ-420132N3 | PRISM LED |
| 168 | MZ-420016N2 | TENSION BAND PART |
| 169 | ZG-420036N | SP PUSH COUPLING |
| 170 | ZG-420105N | SP TRIGGER |

## HEAD DRUM BLOCK

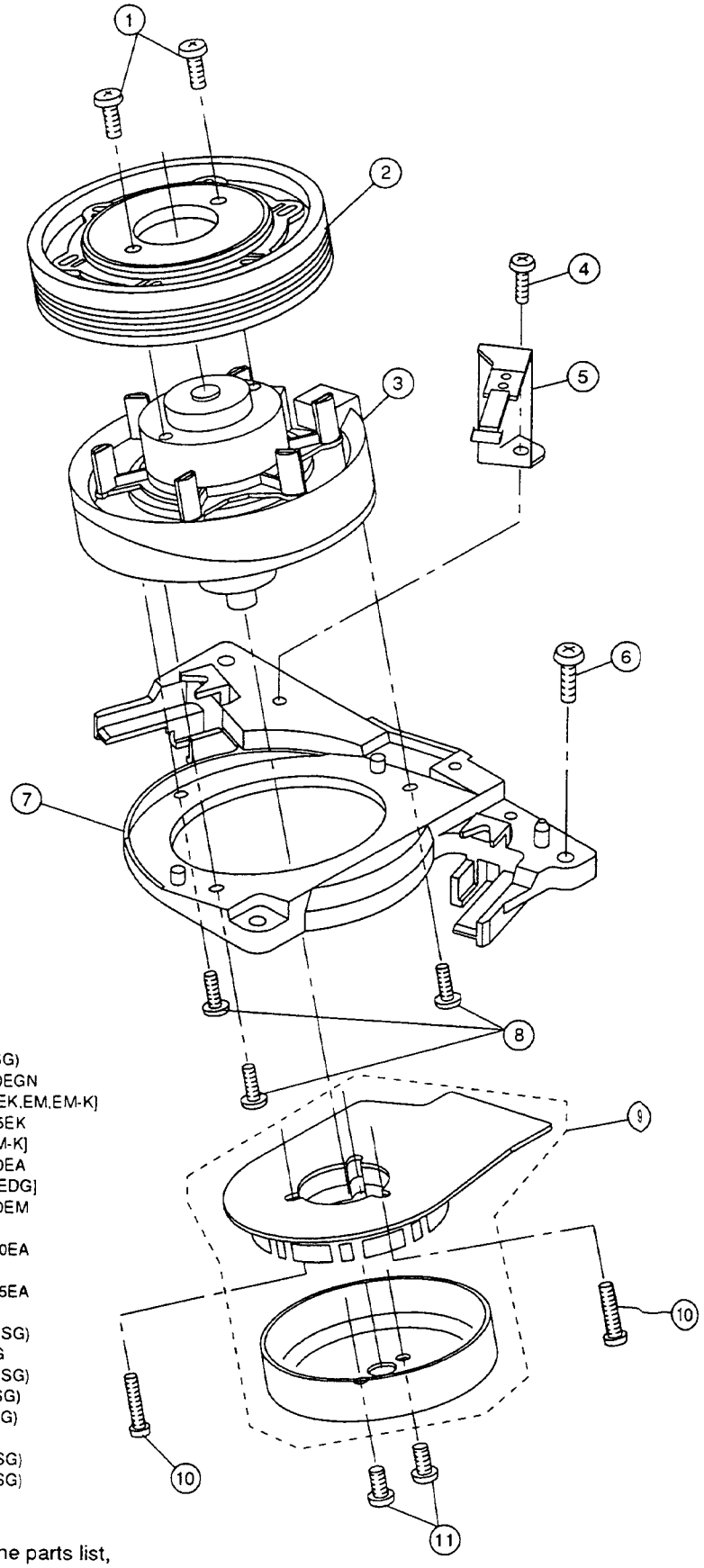



### 2. HEAD DRUM BLOCK

| Ref. No. | Part No. | Description |
|---|---|---|
| 1 | ZS-321298N | BID30X08STL CMT (SG) |
| 2-A | BV-V1123D420A | TL UPPER DRUM BLK X400EGN [2HEADS MODEL EXCEPT EK,EM,EM-K] |
| 2-B | BV-V1182D420A | TL UPPER DRUM BLK G215EK [2HEADS MODEL EK,EM,EM-K] |
| 2-C | BV-V1182D420C | TL UPPER DRUM BLK G420EA [4HEADS MODEL EXCEPT EDG] |
| 2-D | BV-V1205D420A | TL UPPER DRUM BLK G420EM [4HEADS MODEL EDG] |
| 3-A | BV-V1205D410A | TL LOWER DRUM BLK G220EA [2HEADS MODEL] |
| 3-B | BV-V1182D410C | TL LOWER DRUM BLK G415EA [4HEADS MODEL] |
| 4 | ZS-358936N | ST BID30X06STL CMT (SG) |
| 5 | VT-418700J1 | EARTH BRUSH (2) PART AG |
| 6 | ZS-336714N | ST BID30X12STL CMT (SG) |
| 7 | MA-429081N1 | CHASSIS DRUM(A) (SG) |
| 8 | ZS-563444N | BID26X08STL CMT (SG) |
| 9 | BM-433066N1 | MOTOR E20XL16 |
| 10 | ZS-467796N | PAN26X12STL CMT (SG) |
| 11 | ZS-379350N | PAN30X06STL CMT (SG) |

NOTE :
Parts will not be supplied if they are not listed in the parts list, even if they appear on the assembling illustrations with reference No.

## HEAD DRUM BLOCK




### 2. HEAD DRUM BLOCK

| Ref. No. | Part No. | Description |
|---|---|---|
| 1 | ZS-321298N | BID30X08STL CMT (SG) |
| 2-A | BV-V1123D420A | TL UPPER DRUM BLK X400EGN [2HEADS MODEL EXCEPT EK,EM,EM-K] |
| 2-B | BV-V1182D420A | TL UPPER DRUM BLK G215EK [2HEADS MODEL EK,EM,EM-K] |
| 2-C | BV-V1182D420C | TL UPPER DRUM BLK G420EA [4HEADS MODEL EXCEPT EDG] |
| 2-D | BV-V1205D420A | TL UPPER DRUM BLK G420EM [4HEADS MODEL EDG] |
| 3-A | BV-V1205D410A | TL LOWER DRUM BLK G220EA [2HEADS MODEL] |
| 3-B | BV-V1182D410C | TL LOWER DRUM BLK G415EA [4HEADS MODEL] |
| 4 | ZS-358936N | ST BID30X06STL CMT (SG) |
| 5 | VT-418700J1 | EARTH BRUSH (2) PART AG |
| 6 | ZS-336714N | ST BID30X12STL CMT (SG) |
| 7 | MA-429081N1 | CHASSIS DRUM(A) (SG) |
| 8 | ZS-563444N | BID26X08STL CMT (SG) |
| 9 | BM-433066N1 | MOTOR E20XL16 |
| 10 | ZS-467796N | PAN26X12STL CMT (SG) |
| 11 | ZS-379350N | PAN30X06STL CMT (SG) |

NOTE :
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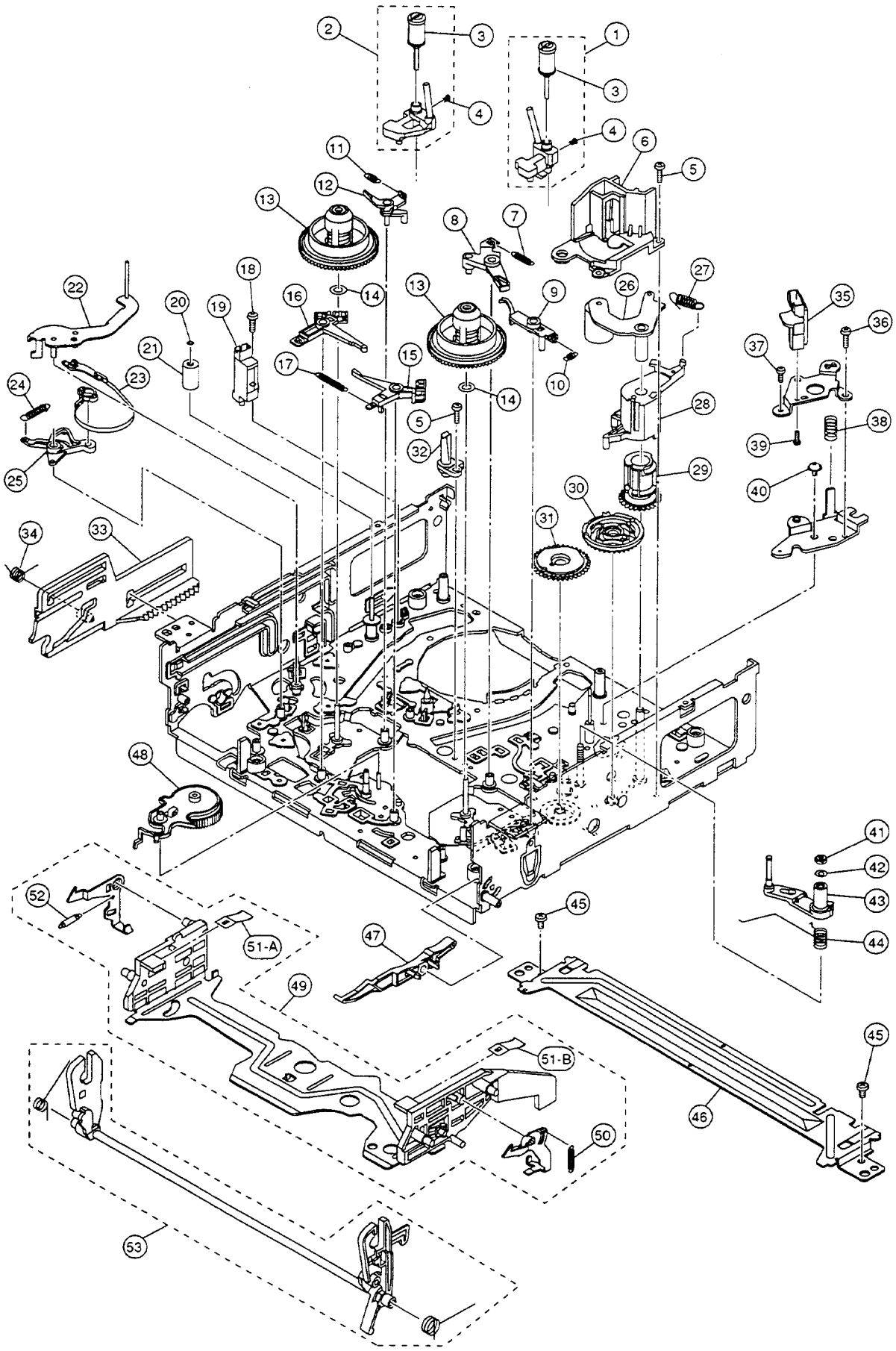
## MECHANISM (1) BLOCK



## 3. MECHANISM (1) BLOCK

| Ref. No. | Part No. | Description |
|---|---|---|
| 1 | BV-424915N04 | LEADER(T) BLK G204EA |
| 2 | BV-424914N03 | LEADER(S) BLK G204EA |
| 3 | VT-387394N3 | GUIDE ROLLER D8 PART |
| 4 | ZS-418616J | PAN20X2.8STL CMT PS1 LEADER |
| 5 | ZS-383761J | ST BID26X06STL CMT |
| 6 | MZ-428101N | HOLDER CAM PINCH |
| 7 | ZG-420095N | SP PULL REVIEW BRAKE |
| 8 | ML-420092N1 | REVIEW BRAKE PART |
| 9 | ML-420102N1 | ARM T.U BRAKE |
| 10 | ZG-420103N1 | SP PULL T.U BRAKE |
| 11 | ZG-420098N | SP PULL LOADING BRAKE |
| 12 | ML-420097N3 | ARM LOADING BRAKE |
| 13 | MT-424632N2 | DISK(2) PART |
| 14 | ZW-424667N | REEL WASHER |
| 15 | ML-420089N1 | MAIN BRAKE(T)PART |
| 16 | ML-420086N1 | MAIN BRAKE(S)PART |
| 17 | ZG-420091N | SP PULL MAIN BRAKE |
| 18 | ZS-403887N | PT BID26X12STL CMT (SG) |
| 19 | HE-422168N | HEAD E HVFHF0040A |
| 20 | ZW-395919J | SLIT W16X035X025 PSL |
| 21 | MR-420022N | ROLLER IMPEDANCE |
| 22 | ML-420006N2 | ARM TENSION PART |
| 23 | MZ-420016N2 | TENSION BAND PART |
| 24 | ZG-420015N1 | SP PULL TENSION(1) |
| 25 | ML-420416N3 | LEVER TENSION(1)PART |
| 26 | BL-428114N1 | ARM PINCH ROLLER(2)PART |
| 27 | ZG-428105N1 | SP PULL PINCH ROLLER |
| 28 | ML-428102N1 | LEVER CAM PINCH |
| 29 | MZ-420064N1 | GEAR CAM HELICAL |
| 30 | MZ-428103N | GEAR CAM R-204 |
| 31 | MZ-420067N | GEAR PINCH |
| 32 | MZ-420132N3 | PRISM LED |
| 33 | ML-420168N1 | SLIDER FRONT LOADING |
| 34 | ZG-420169N1 | SP TORSION SLIDER |
| 35 | HR-416732N | HEAD COMBO HVMZA1201A |
| 36 | ZS-575392 | PAN26X08STL CMT |
| 37 | ZS-422170J | PAN26X07STL CMT CP |
| 38 | ZG-420075N | SP PUSH A/C |
| 39 | ZS-418480J | PAN20X2.2STL BZN PS1 |
| 40 | ZS-362533 | ST PAN30X05STL CMT C080 |
| 41 | ZW-350839 | N30 NYLON |
| 42 | ZW-324417 | PW31X060X050PSL |
| 43 | ML-420068N1 | ARM REVIEW PART |
| 44 | ZG-420071N1 | SP TORSION REVIEW |
| 45 | ZS-358936N | ST BID30X06STL CMT (SG) |
| 46 | MZ-420172N2 | PLATE UPPER |
| 47 | ML-420170N | ARM LID OPENER |
| 48 | MI-420023N3 | ARM IDLER PART |
| 49 | BV-424919N09 | CASSETTE LOAD BLK G204EA |
| 50 | ZG-420167N1 | SP PULL DUMPER(T) |
| 51-A | ZG-426481N | SP PLATE UPPER(S) |
| 51-B | ZG-425178N | SP PLATE UPPER(T) |
| 52 | ZG-420166N | SP PULL DUMPER(S) |
| 53 | BL-424913N06 | ARM LOADING BLK G204EA |
| 55 | BB-428300N | MECHA DECK GXS |

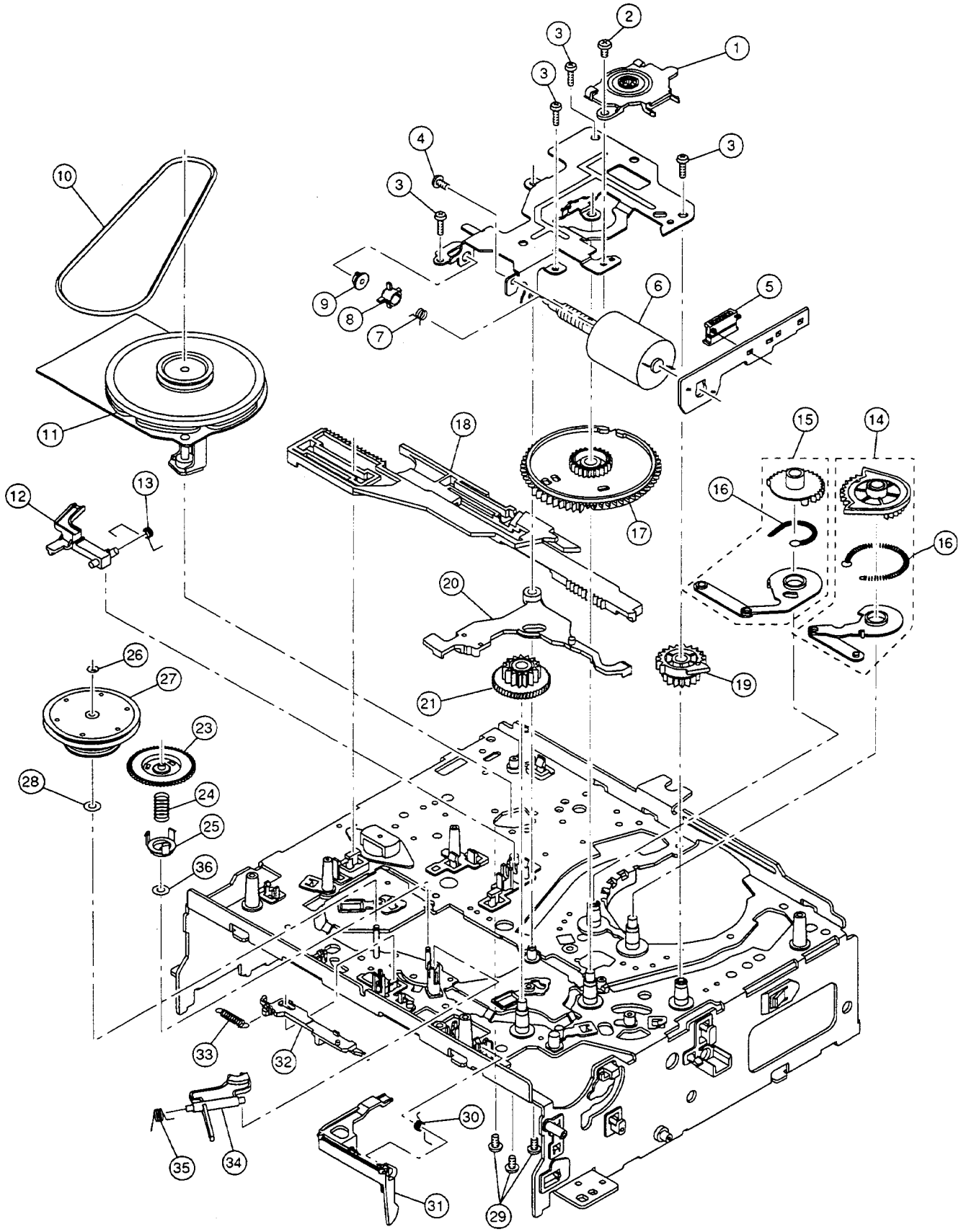
NOTE :
Parts will not be supplied if they are not listed in the parts list, even if they appear on the assembling illustrations with reference No.

## 3. MECHANISM (1) BLOCK

| Ref. No. | Part No. | Description |
|---|---|---|
| 1 | BV-424915N04 | LEADER(T) BLK G204EA |
| 2 | BV-424914N03 | LEADER(S) BLK G204EA |
| 3 | VT-387394N3 | GUIDE ROLLER D8 PART |
| 4 | ZS-418616J | PAN20X2.8STL CMT PS1 LEADER |
| 5 | ZS-383761J | ST BID26X06STL CMT |
| 6 | MZ-428101N | HOLDER CAM PINCH |
| 7 | ZG-420095N | SP PULL REVIEW BRAKE |
| 8 | ML-420092N1 | REVIEW BRAKE PART |
| 9 | ML-420102N1 | ARM T.U BRAKE |
| 10 | ZG-420103N1 | SP PULL T.U BRAKE |
| 11 | ZG-420098N | SP PULL LOADING BRAKE |
| 12 | ML-420097N3 | ARM LOADING BRAKE |
| 13 | MT-424632N2 | DISK(2) PART |
| 14 | ZW-424667N | REEL WASHER |
| 15 | ML-420089N1 | MAIN BRAKE(T)PART |
| 16 | ML-420086N1 | MAIN BRAKE(S)PART |
| 17 | ZG-420091N | SP PULL MAIN BRAKE |
| 18 | ZS-403887N | PT BID26X12STL CMT (SG) |
| 19 | HE-422168N | HEAD E HVFHF0040A |
| 20 | ZW-395919J | SLIT W16X035X025 PSL |
| 21 | MR-420022N | ROLLER IMPEDANCE |
| 22 | ML-420006N2 | ARM TENSION PART |
| 23 | MZ-420016N2 | TENSION BAND PART |
| 24 | ZG-420015N1 | SP PULL TENSION(1) |
| 25 | ML-420416N3 | LEVER TENSION(1)PART |
| 26 | BL-428114N1 | ARM PINCH ROLLER(2)PART |
| 27 | ZG-428105N1 | SP PULL PINCH ROLLER |
| 28 | ML-428102N1 | LEVER CAM PINCH |
| 29 | MZ-420064N1 | GEAR CAM HELICAL |
| 30 | MZ-428103N | GEAR CAM R-204 |
| 31 | MZ-420067N | GEAR PINCH |
| 32 | MZ-420132N3 | PRISM LED |
| 33 | ML-420168N1 | SLIDER FRONT LOADING |
| 34 | ZG-420169N1 | SP TORSION SLIDER |
| 35 | HR-416732N | HEAD COMBO HVMZA1201A |
| 36 | ZS-575392 | PAN26X08STL CMT |
| 37 | ZS-422170J | PAN26X07STL CMT CP |
| 38 | ZG-420075N | SP PUSH A/C |
| 39 | ZS-418480J | PAN20X2.2STL BZN PS1 |
| 40 | ZS-362533 | ST PAN30X05STL CMT C080 |
| 41 | ZW-350839 | N30 NYLON |
| 42 | ZW-324417 | PW31X060X050PSL |
| 43 | ML-420068N1 | ARM REVIEW PART |
| 44 | ZG-420071N1 | SP TORSION REVIEW |
| 45 | ZS-358936N | ST BID30X06STL CMT (SG) |
| 46 | MZ-420172N2 | PLATE UPPER |
| 47 | ML-420170N | ARM LID OPENER |
| 48 | MI-420023N3 | ARM IDLER PART |
| 49 | BV-424919N09 | CASSETTE LOAD BLK G204EA |
| 50 | ZG-420167N1 | SP PULL DUMPER(T) |
| 51-A | ZG-426481N | SP PLATE UPPER(S) |
| 51-B | ZG-425178N | SP PLATE UPPER(T) |
| 52 | ZG-420166N | SP PULL DUMPER(S) |
| 53 | BL-424913N06 | ARM LOADING BLK G204EA |
| 55 | BB-428300N | MECHA DECK GXS |

NOTE :
Parts will not be supplied if they are not listed in the parts list, even if they appear on the assembling illustrations with reference No.

## MECHANISM (2) BLOCK



## 4. MECHANISM (2) BLOCK

| Ref. No. | Part No. | Description |
|---|---|---|
| 1 | ES-419326N1 | SW MODE SELECT MMS00202ZMB0 |
| 2 | ZS-358936N | ST BID30X06STL CMT (SG) |
| 3 | ZS-389950N | PT BID26X10STL CMT (SG) |
| 4 | ZS-425981 | BID30X03STL CMT |
| 5 | EJ-422169J | SOCKET TKC-M07X-A17P |
| 6 | BM-421746N1 | MOTOR PART |
| 7 | ZG-420105N | SP TRIGGER |
| 8 | MR-420106N | PULLEY TRIGGER |
| 9 | MR-420109N | HOLDER THRUST WORM |
| 10 | MB-420053N | BELT CAPSTAN |
| 11 | BM-428250N2 | MOTOR SCV-0604A |
| 12 | ML-428108N | STILL BRAKE PART |
| 13 | ZG-428110N | SP TORSION S.B |
| 14 | MZ-424917N03 | GEAR TOGGLE (S) BLK G204EA |
| 15 | MZ-424916N04 | GEAR TOGGLE (T) BLK G204EA |
| 16 | ZG-420117N | SP PULL TOGGLE |
| 17 | MZ-420122N1 | GEAR CAM MAIN |
| 18 | ML-420110N4 | SLIDER PINCH |
| 19 | MZ-420124N3 | GEAR FRONT LOADING |
| 20 | ML-420099N2 | LEVER M BRAKE |
| 21 | MZ-420123N | GEAR WORM WHEEL |
| 23 | MZ-420035N | GEAR COUPLING |
| 24 | ZG-420036N | SP PUSH COUPLING |
| 25 | MI-420037N | DISK COUPLING |
| 26 | ZW-418816J | SLIT W21X050X050PSL |
| 27 | MI-420038N4 | DISK CLUTCH PART |
| 28 | ZW-389923J | PW26X060X050PSL |
| 29 | ZS-432843N | PAN26X04STL CMT (SG) |
| 30 | ZG-420134N1 | SP TORSION REC-S |
| 31 | ML-420133N2 | LEVER REC-S |
| 32 | ML-420100N3 | SLIDER TRIGGER |
| 33 | ZG-420101N | SP PULL TRIGGER |
| 34 | ML-426550N | ARM F/R COUPLING |
| 35 | ZG-420034N2 | SP TORSION COUPLING |
| 36 | ZW-321317 | PW21X040X050PSL |

NOTE :
Parts will not be supplied if they are not listed in the parts list, even if they appear on the assembling illustrations with reference No.

## 5. P.C. BOARD BLOCK

| Ref. No. | Part No. | Description |
|---|---|---|
| 1-A | BA-V1222V600B | NS PC(#) MAIN BLK G245EA [G240/G245/G246EA] |
| 1-B | BA-V1222V600C | NS PC(#) MAIN BLK G240EDG |
| 1-C | BA-V1222V600G | NS PC(#) MAIN BLK G240EK |
| 1-D | BA-V1224V600F | NS PC(#) MAIN BLK G240EOH(E) |
| 1-E | BA-V1222V600J | NS PC(#) MAIN BLK G240EM |
| 1-F | BA-V1222V600H | NS PC(#) MAIN BLK G241EOH(Y1) [G240/G241EOH[Y1]] |
| 1-G | BA-V1224V600C | NS PC(#) MAIN BLK G245EDG |
| 1-H | BA-V1222V600D | NS PC(#) MAIN BLK G245EK |
| 1-I | BA-V1222V600E | NS PC(#) MAIN BLK G245EO |
| 1-J | BA-V1222V600L | NS PC(#) MAIN BLK G245EOH(Y1) |
| 1-K | BA-V1224V600D | NS PC(#) MAIN BLK G247EOG [G247/G257EOG] |
| 1-L | BA-V1222V600K | NS PC(#) MAIN BLK G250EM-K |
| 1-M | BA-V1224V600H | NS PC(#) MAIN BLK G254EOH(Y1) [G254/G255EOH] |
| 1-N | BA-V1222V600F | NS PC(#) MAIN BLK G246EK |
| 1-O | BA-V1226V600B | NS PC(#) MAIN BLK G445EA [G440/G445EA] |
| 1-P | BA-V1226V600C | NS PC(#) MAIN BLK G440EDG |
| 1-Q | BA-V1227V600C | NS PC(#) MAIN BLK G445EDG |
| 1-R | BA-V1226V600D | NS PC(#) MAIN BLK G445EK |
| 1-S | BA-V1226V600E | NS PC(#) MAIN BLK G445EO |
| 1-T | BA-V1226V600F | NS PC(#) MAIN BLK G445EOH(Y1) |
| 1-U | BA-V1227V600H | NS PC(#) MAIN BLK G455EOH(Y1) |
| 1-V | BA-V1227V600E | NS PC(#) MAIN BLK G457EOG |
| 2-A | BA-F5001V040A | NS PC VIF-NOR BLK NOR-EA [EA] |
| 2-B | BA-F5001V030A | NS PC VIF-EDG BLK NOR-EDG [EDG] |
| 2-C | BA-F5001V040F | NS PC VIF-NOR BLK NOR-EOG [EO,EOH,EOG] |
| 2-D | BA-F5001V040C | NS PC VIF-NOR BLK NOR-EM [EM] |
| 2-E | BA-F5001V040B | NS PC VIF-NOR BLK NOR-EK [G240/G245/G445EK] |
| 2-F | BA-F5001V030B | NS PC VIF-EDG BLK NOR-EM-K [EM-K] |
| 2-G | BA-F5001V040D | NS PC VIF-NOR BLK NOR-ES [G246EK] |

PC (#) MAIN BLK CONSISTIS OF FOLLOWING P.C. BOARDS.

- MAIN P.C. BOARD
- PRE-AMP P.C. BOARD
- DETECT P.C. BOARD
- VIF BLK

## 6. MAIN P.C. BOARD

| Ref. No. | Part No. | Description |
|---|---|---|
| C201 | ⚠ EC-422101N | C MMY V CUT MKTR40 104M 275AC |
| C202 | ⚠ EC-422101N | C MMY V CUT MKTR40 104M 275AC |
| C204 | ⚠ EC-418706N | C CE V CUT CS11 E222M 400AC [EK,EO,EOH,EOG] |
| C205 | ⚠ EC-418706N | C CE V CUT CS11 E222M 400AC |
| C206 | ⚠ EC-418706N | C CE V CUT CS11 E222M 400AC |
| C207 | ⚠ EC-418706N | C CE V CUT CS11 E222M 400AC |
| C208 | ⚠ EC-418706N | C CE V CUT CS11 E222M 400AC [EK,EO,EOH,EOG] |
| C209 | ⚠ EC-418706N | C CE V CUT CS11 E222M 400AC |
| C210-A | EC-432918N | C EC V CUT YK 330M 400.0DC [EXCEPT EM,EM-K] |
| C210-B | EC-422104N | C EC V CUT USW18 820M 400.0DC [EM,EM-K] |
| C211 | ⚠ EC-428385N | C MMY V T05 MMCV 473K 400DC |
| C212 | ⚠ EC-418759N | C CE V T05 CC45 SL121K 1000DC |
| C213 | EC-422421N | C EC V T05 SSP 4R7M 50.0DC |
| C220 | EC-422106N | C EC V CUT YXB12 222M 6.3DC |
| C222 | EC-422107N | C EC V CUT YXB10 471M 25.0DC |
| C236 | EC-431086N | C EC V CUT TWSS 102M 16.0DC |
| C436 | ⚠ EC-416655N | C DBL LAYER T05 FM0H473Z 5.5DC |
| D3 | ED-307573N | D SILICON H 1SS131T-77 T26 [EDG,EOH,EOG] |
| D4 | ED-428384N | D ZENER H MTZJ15C T26 [EDG,EOH,EOG] |
| D201 | ⚠ ED-418622N | D SILICON 1N4006N02 T05 800/1A |
| D202 | ⚠ ED-418622N | D SILICON 1N4006N02 T05 800/1A |
| D203 | ⚠ ED-418622N | D SILICON 1N4006N02 T05 800/1A |
| D204 | ⚠ ED-418622N | D SILICON 1N4006N02 T05 800/1A |
| D205 | ⚠ ED-427506N | D SILI.ERA22-10 T26 1000/0.5A |
| D207 | ED-307573N | D SILICON H 1SS131T-77 T26 |
| D208 | ED-425369J | D SCHOTTKY AK03V0 T26 |
| D209-A | ED-428420J | D SILICON RL103F-N02T05 200/1A [EXCEPT EM,EM-K] |
| D209-B | ED-401046J | D SILICON RL104F-E T26 400/1A [EM,EM-K] |
| D210 | ED-428366N | D SCHOTTKY ERB83-004L6 S12 |
| D212 | ED-428367N | D SCHOTTKY ERB84-009L6 S12 |
| D214-A | ED-428420J | D SILICON RL103F-N02T05 200/1A [EXCEPT EM,EM-K] |
| D214-B | ED-401046J | D SILICON RL104F-E T26 400/1A [EM,EM-K] |
| D215-A | ED-425278N | D ZENER H MTZJ20A T26 [EXCEPT EM,EM-K] |
| D215-B | ED-394991N | D ZENER H HZS18-3 T26 [EM,EM-K] |
| D218 | ED-307573N | D SILICON H 1SS131T-77 T26 |
| D219 | ED-422519N | D ZENER H MTZJ4.3B T26 |
| D220 | ED-403280N | D SILICON 1N4002N02 T05 100/1A |
| D221 | ED-403280N | D SILICON 1N4002N02 T05 100/1A |
| D225 | ED-422252N | D ZENER H HZS12A3L T26 |
| D229 | ED-404242N | D ZENER H MTZJ5.6A T26 |
| D230 | ED-404242N | D ZENER H MTZJ5.6A T26 |
| D231 | ED-307573N | D SILICON H 1SS131T-77 T26 |
| D232 | ED-307573N | D SILICON H 1SS131T-77 T26 |
| D301 | ED-307573N | D SILICON H 1SS131T-77 T26 [EM-K] |
| D401 | ED-422251N | D LED GL528VTB INFRARED T05 |
| D402 | ED-390012N | D LED GL4800 INFRARED |
| D403 | ED-390012N | D LED GL4800 INFRARED |
| D404 | ED-427218N | D ZENER H MTZJ6.2C T26 |
| D405 | ED-307573N | D SILICON H 1SS131T-77 T26 |
| D406 | ED-307573N | D SILICON H 1SS131T-77 T26 |
| D410 | ED-307573N | D SILICON H 1SS131T-77 T26 |
| D411 | ED-428383N | D ZENER H MTZJ3.0B T26 |
| D412 | ED-307573N | D SILICON H 1SS131T-77 T26 |
| D413 | ED-307573N | D SILICON H 1SS131T-77 T26 |
| D601 | ED-307573N | D SILICON H 1SS131T-77 T26 |
| D602 | ED-307573N | D SILICON H 1SS131T-77 T26 |
| D603 | ED-307573N | D SILICON H 1SS131T-77 T26 [EM,EM-K,G245/G246EK] |
| FL330 | EO-427540N | COIL OSC 1 V1205-087 70.0KHZ |
| FL401 | EM-428381N | IND FL FV681G CHARACTER |
| FR201 | ⚠ ER-397385N | R FUSE V T05 RF25SCVTP1/4WR20K [EM,EM-K] |
| FR202 | ⚠ ER-418648N | R FUSE V T05 RF25SCVTP1/4WR24K |
| FR203 | ⚠ ER-400729N | R FUSE V T05 RF25SCVTP1/4WR47K |
| FR204 | ⚠ ER-428204N | R FUSE V T05RF25SVTP 1/4W 220J |
| FR206 | ⚠ ER-408829N | R FUSE V T05 RF25SCVTP1/4WR11K |
| FR401 | ⚠ ER-400729N | R FUSE V T05 RF25SCVTP1/4WR47K |
| F201 | ⚠ EF-394702N | FUSE 218 TIME 250V 2.00A |
| IC1 | EI-389471N | IC L5631 T05 |
| IC2 | EI-390053N | IC LA7910 [EXCEPT G245/G445EK] |
| IC101 | EI-432783N | IC MM1111XF FPB T12E [EXCEPT EOG,G245/G445EDG, G240EOH(E),G254EOH(Y1),G255/ G455EOH] |
| IC201 | EI-422128N | IC TA76431S T05 |
| IC301 | EI-419278N | IC LA7285M T2T32P |
| IC401-A | EI-433103N | IC M37774M5H389GP NXGSYPS1 [EXCEPT EK,EOG] |
| IC401-B | EI-433099N | IC M37774M5H390GP NXGSYPV1 [EK] |
| IC401-C | EI-433100N | IC M37774M5H391GP NXGSYGS1 [EOG] |

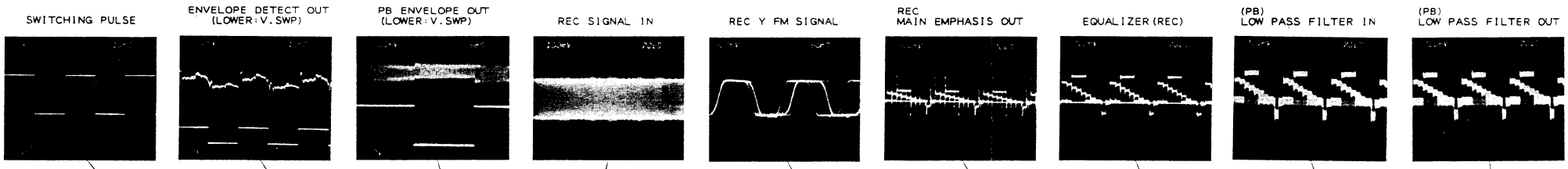
| Ref. No. | Part No. | Description |
|---|---|---|
| IC402 | EI-353750N | IC NJM4558MB T1 T1T32P |
| IC403 | EI-403233N | IC LB1641 |
| IC404-A | EI-422442N | IC 24LC02BT/SN FP T12E [EXCEPT G240EK,G245/G445EA/EDG/ EO/EOH,G246EA,G247EOG] |
| IC404-B | EI-431275N | IC 24LC04BT/SN FP T12E [G240EK,G245/G445EA/EDG/EO/EOH, G246EA,G247EOG] |
| IC405 | EI-422145N | IC UPD16312GB-3B4 |
| IC406 | EI-428401N | IC PST9130-T T05 |
| IC407 | EI-428403N | IC SDA5649X FP T24E [EK,EOG,G245/G445EDG,G254/G255/ G455EOH] |
| IC601-A | EI-432781N | IC LA7447BM [EXCEPT EM-K] |
| IC601-B | EI-432784N | IC LA7440M [EM-K] |
| IC696 | EI-433089N | IC LC89971-SK [EM-K] |
| IC697 | EI-432780N | IC LC89975M-TE-R FPR T16E [EXCEPT EM-K] |
| IC751 | EI-428406N | IC LA7356M-TRM FPR T12E [EDG,EM,EM-K] |
| L1 | EO-390849N | COIL FIX 1 LF-5.0S T26 4R7K [EA,EM,EM-K,EO,G246EK] |
| L2-A | EO-379354N | COIL FIX 1 LAP02TA T26 1R0K [EA] |
| L2-B | EO-425199N | COIL FIX 1 LF-5.0S T26 R68K [EM,G240/G245/G445EK] |
| L2-C | EO-424201N | COIL FIX 1 LF-5.0S T26 R47K [EM-K] |
| L3 | EO-422488N | COIL FIX 1 LF-5.0S T26 100J [EO] |
| L101 | EO-345881N | COIL FIX 1 EL0606SKI 101J [EA,EK,EM,EM-K,EO,G240/G241/G245/ G445EOH(Y1)] |
| L201 | ⚠ EO-428349N | COIL LF UF1922C4-152Y1R5-01 [EK,EO,EOH,EOG] |
| L202 | ⚠ EO-428417N | COIL LF HF2022-333Y0R3-01 |
| L203 | EO-422134N | COIL FIX 2 PC7-330K 330K |
| L205 | EO-422134N | COIL FIX 2 PC7-330K 330K |
| L352-A | EO-403270N | COIL FIX 1 EL0405RA T05 101J [EDG,EK,EOH,EOG,G240/G245/G445EK] |
| L352-B | EO-426410N | COIL FIX 1 LHL06TB T05 561K [EA,EM,EM-K,EO,G246EK] |
| L401 | EO-432682N | COIL FIX 1 EL0405RA T05 220J |
| L402 | EO-414830N | COIL FIX 1 LAP02TA T26 220J |
| L601 | EO-422479N | COIL FIX 1 LF-5.0S T26 330J |
| L602 | EO-345881N | COIL FIX 1 EL0606SKI 101J |
| L603 | EO-422473N | COIL FIX 1 LF-5.0S T26 680J |
| L605 | EO-422479N | COIL FIX 1 LF-5.0S T26 330J [EXCEPT EA,EK] |
| L606 | EO-422477N | COIL FIX 1 LF-5.0S T26 470J |
| L610 | EO-422478N | COIL FIX 1 LF-5.0S T26 390J [EM-K] |
| L651 | EO-422478N | COIL FIX 1 LF-5.0S T26 390J |
| L652 | EO-422477N | COIL FIX 1 LF-5.0S T26 470J |
| L653 | EO-422488N | COIL FIX 1 LF-5.0S T26 100J |
| L654 | EO-428358N | COIL FIX 1 LF-5.0S T26 221J |
| L671 | EO-422473N | COIL FIX 1 LF-5.0S T26 680J |
| L672 | EO-428358N | COIL FIX 1 LF-5.0S T26 221J |
| L673 | EO-428360N | COIL FIX 1 LF-5.0S T26 331J |
| L674 | EO-422476N | COIL FIX 1 LF-5.0S T26 5R6J |
| L675 | EO-345881N | COIL FIX 1 EL0606SKI 101J |
| L676 | EO-425203N | COIL FIX 1 LF-5.0S T26 4R7J |
| L677 | EO-425203N | COIL FIX 1 LF-5.0S T26 4R7J [4HEADS MODEL] |
| L696 | EO-345881N | COIL FIX 1 EL0606SKI 101J [EM-K] |
| L697 | EO-422474N | COIL FIX 1 LF-5.0S T26 6R8J [EK,EO,EOH,EOG] |
| L698 | EO-345881N | COIL FIX 1 EL0606SKI 101J [EXCEPT EM-K] |
| MD1-A | BV-387610N | RF CONVERTER YAA21-0809G EA [EA] |
| MD1-B | BV-425222N | RF CONVER. YAA21-1001G G/K EDG [EDG] |
| MD1-C | BV-429839N | RF CONVERTER YAA21-1045H G EO [EO,EOH,EOG] |
| MD1-D | BV-429837N | RF CONVERTER YAA21-1046H I EK [EK] |
| MD1-E | BV-387611N | RF CONVERTER YAA21-0808G EV [EM] |
| MD1-F | BV-427963N | RF CONVER. YAA211031G G/I/K EDI [EM-K] |
| PH201 | ⚠ ET-422113N | PHOTO COUPLER PS2561-1-V |
| PJ101 | EJ-432949N | PIN J T6582-ABBB YL.BK.4P [EA,EM,EM-K] |
| PJ102 | EJ-429978N | SOCKET 035 0 9846 05 21P [EK,EO,G240/G440EDG,G240/G241/G245/ G445EOH(Y1)] |
| P101 | EJ-429906N | PLUG TSK-B17P-A1 17P [EOG,G245/G445EDG,G240EOH(E), G254EOH(Y1),G255/G455EOH] |
| P201 | ⚠ EJ-416590N | SOCKET INLET CCT-2302-0371 2P |
| P401 | EJ-422178N | PLUG TKC-G08P-A1 8P |
| P402 | EJ-422176N | PLUG TKC-M07P-B1 7P |
| P601-A | EJ-432822N | SOCKET 52045-1845 18P [4HEADS MODEL] |
| P601-B | EJ-432820N | SOCKET 52045-1445 14P [2HEADS MODEL] |
| R201 | ⚠ ER-422189N | R CT P BGR3N 3W 4R7K [EXCEPT EA,EDG] |
| R206 | ER-428396N | R OMF H S15 FS ERG2SH 2W 823J |
| R208 | ER-422512N | R OMF H S15 FS ERG2SH 2W 151J |
| R210-A | ER-428386N | R OMF V T05 FS ERX1SE 1W R56J [EXCEPT EM,EM-K] |
| R210-B | ER-416671N | R OMF V T05 FS ERX1SE 1W R33J [EM,EM-K] |
| SW401 | ES-426275N | SW MICRO ESE11SV1A |
| SW402 | ES-428362N | SW TACT SKHHLV |
| SW403 | ES-414593N | SW TACT SOR-142HS T05 |
| SW404 | ES-414593N | SW TACT SOR-142HS T05 |
| SW405 | ES-414593N | SW TACT SOR-142HS T05 |
| SW406 | ES-414593N | SW TACT SOR-142HS T05 |
| SW407 | ES-414593N | SW TACT SOR-142HS T05 |
| SW408 | ES-414593N | SW TACT SOR-142HS T05 |
| SW409 | ES-414593N | SW TACT SOR-142HS T05 |
| TR1 | ET-392746N1 | TR 2SA933AS R,S T05 [EA,EM] |
| TR2 | ET-364492N | TR DTC114TS T05 [EXCEPT EA,EM] |
| TR3 | ET-392746N1 | TR 2SA933AS R,S T05 |
| TR4 | ET-414816N | TR 2SC2668 Y T05 |
| TR5 | ET-373201N | TR DTC144TS T05 [EDG,EOH,EOG] |
| TR6 | ET-392663N | TR 2SC1740S R,S T05 [EDG,EOH,EOG] |
| TR7 | ET-428248N | TR C.2SA1037AK R,S T146T08E [EA,EK,EO,EM,EM-K] |
| TR8 | ET-364023N | TR DTC114ES T05 |
| TR9 | ET-392746N1 | TR 2SA933AS R,S T05 |
| TR10 | ET-392663N | TR 2SC1740S R,S T05 |
| TR11 | ET-392746N1 | TR 2SA933AS R,S T05 |
| TR12 | ET-429897N | TR C.DTC144EKA T146T08E [EA,EK,EO,EM,G240/G440EDG, G240/G241/G245/G445EOH(Y1)] |
| TR13 | ET-364291N | TR DTA144ES T05 [EK,EO,G240/G440EDG,G240/G241/G245/ G445EOH(Y1)] |
| TR14 | ET-392746N1 | TR 2SA933AS R,S T05 [EOG,G245/G445EDG,G240EOH(E), G254EOH(Y1),G255/G455EOH] |
| TR101 | ET-392746N1 | TR 2SA933AS R,S T05 [EXCEPT EOG,G245/G445EDG, G240EOH(E),G254EOH(Y1), G255/G455EOH] |
| TR199 | ET-430868N | TR C.DTC114EKA T146T08E [EOG,G245/G445EDG,G240EOH(E), G254EOH(Y1),G255/G455EOH] |
| TR201-A | ⚠ ET-428371N | TR 2SC4908 [EXCEPT EM,EM-K] |
| TR201-B | ⚠ ET-427538N | TR FET 2SK2056 LBS2AKCAI [EM,EM-K] |

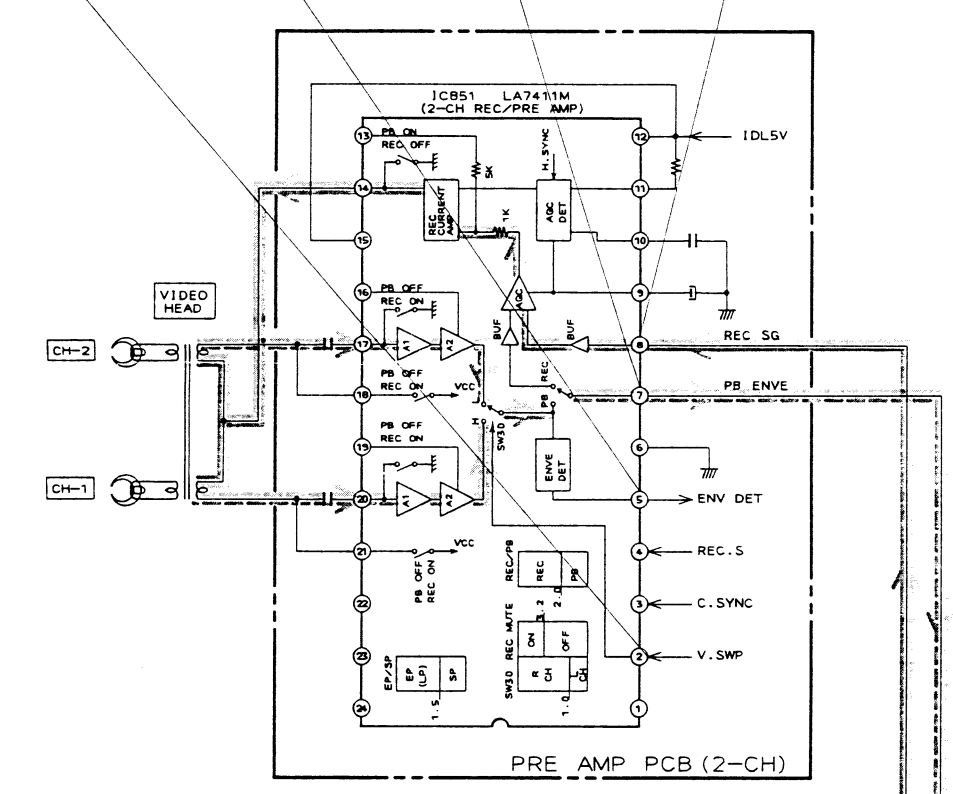
| Ref. No. | Part No. | Description |
|---|---|---|
| TR202-A | ⚠ET-422129N | TR 2SD2132 U,V T05 [EXCEPT EM,EM-K] |
| TR202-B | ⚠ET-428407N | TR 2SC3616 M,L T05 [EM,EM-K] |
| TR203 | ET-386784N | TR DTA143TS T05 |
| TR204 | ET-415140N | TR DTA115TS T05 |
| TR205 | ET-392663N | TR 2SC1740S R,S T05 |
| TR207 | ET-428373N | TR C.2SD2318 E,U,V FPTLT16E |
| TR208 | ET-392663N | TR 2SC1740S R,S T05 |
| TR211 | ET-416697N | TR 2SD2396 J,K |
| TR212 | ET-392663N | TR 2SC1740S R,S T05 |
| TR213 | ET-392663N | TR 2SC1740S R,S T05 |
| TR214 | ET-368786N | TR DTC143ZS T05 |
| TR217 | ET-428407N | TR 2SC3616 M,L T05 [EM,EM-K] |
| TR301 | ET-419014N | TR 2SC1741S Q,R T05 |
| TR302 | ET-373201N | TR DTC144TS T05 |
| TR303 | ET-429899N | TR C.DTA144TKA T146T08E [EM-K] |
| TR304 | ET-433071N | TR C.DTC144TKA T146T08E [EM-K] |
| TR351 | ET-392663N | TR 2SC1740S R,S T05 |
| TR401 | ET-390009N | TR PHOTO PT493F |
| TR402 | ET-390009N | TR PHOTO PT493F |
| TR403 | ET-390010N | TR PHOTO PT4800 |
| TR404 | ET-390010N | TR PHOTO PT4800 |
| TR405 | ET-361961N | TR DTC144ES T05 |
| TR406 | ET-392746N1 | TR 2SA933AS R,S T05 |
| TR409 | ET-428400N | TR C.DTC143EKA T146T08E |
| TR601 | ET-366753N | TR DTA114ES T05 |
| TR602 | ET-392746N1 | TR 2SA933AS R,S T05 [EOG,G245/G445EDG,G240EOH(E), G254EOH(Y1),G255/G455EOH] |
| TR603 | ET-392663N | TR 2SC1740S R,S T05 |
| TR604 | ET-361961N | TR DTC144ES T05 |
| TR606 | ET-392663N | TR 2SC1740S R,S T05 |
| TR607 | ET-392663N | TR 2SC1740S R,S T05 |
| TR608 | ET-364291N | TR DTA144ES T05 [EXCEPT EA,EK] |
| TR610 | ET-392663N | TR 2SC1740S R,S T05 |
| TR611 | ET-392663N | TR 2SC1740S R,S T05 [EM-K] |
| TR612 | ET-366753N | TR DTA114ES T05 |
| TR613 | ET-392663N | TR 2SC1740S R,S T05 |
| TR614 | ET-361961N | TR DTC144ES T05 [EM-K] |
| TR652 | ET-392663N | TR 2SC1740S R,S T05 |
| TR653 | ET-364291N | TR DTA144ES T05 |
| TR654 | ET-392663N | TR 2SC1740S R,S T05 |
| TR657 | ET-392663N | TR 2SC1740S R,S T05 |
| TR672 | ET-392663N | TR 2SC1740S R,S T05 |
| TR673 | ET-392663N | TR 2SC1740S R,S T05 |
| TR674 | ET-392663N | TR 2SC1740S R,S T05 |
| TU1-A | EE-419189N | TV TUNER VTSH6AZ01 EA [EA] |
| TU1-B | EE-432823N | TV TUNER TEKE4-168A EOG [EDG,EOH,EOG] |
| TU1-C | EE-428336N | TV TUNER TEKB1-014A EK [G240/G245/G445EK] |
| TU1-D | EE-432827N | TV TUNER TEKE1-147A EO [EO,G246EK] |
| TU1-E | EE-405638N | TV TUNER VTSS6CZ EM [EM] |
| TU1-F | EE-428206N | TV TUNER TEKE1-115A EGN [EM-K] |
| T201-A | ⚠BT-433085N | TRANS POW V1222EA-TM [EXCEPT EM,EM-K] |
| T201-B | ⚠BT-432834N | TRANS POW V1222 EM [EM,EM-K] |
| X401 | EI-425240N | OSC X'TAL APS1011A 16.000MHZ |
| X402 | EI-431323N | OSC X'TAL C-002RX 32.768KHZ |
| X601-A | EI-405660N | OSC X'TAL HC-49U 4.433619MHZ [EXCEPT EM-K] |
| X601-B | EI-431006N | OSC X'TAL HC-49U GX 3.579545MH [EM-K] |
| X602 | EI-405660N | OSC X'TAL HC-49U 4.433619MHZ [EM-K] |

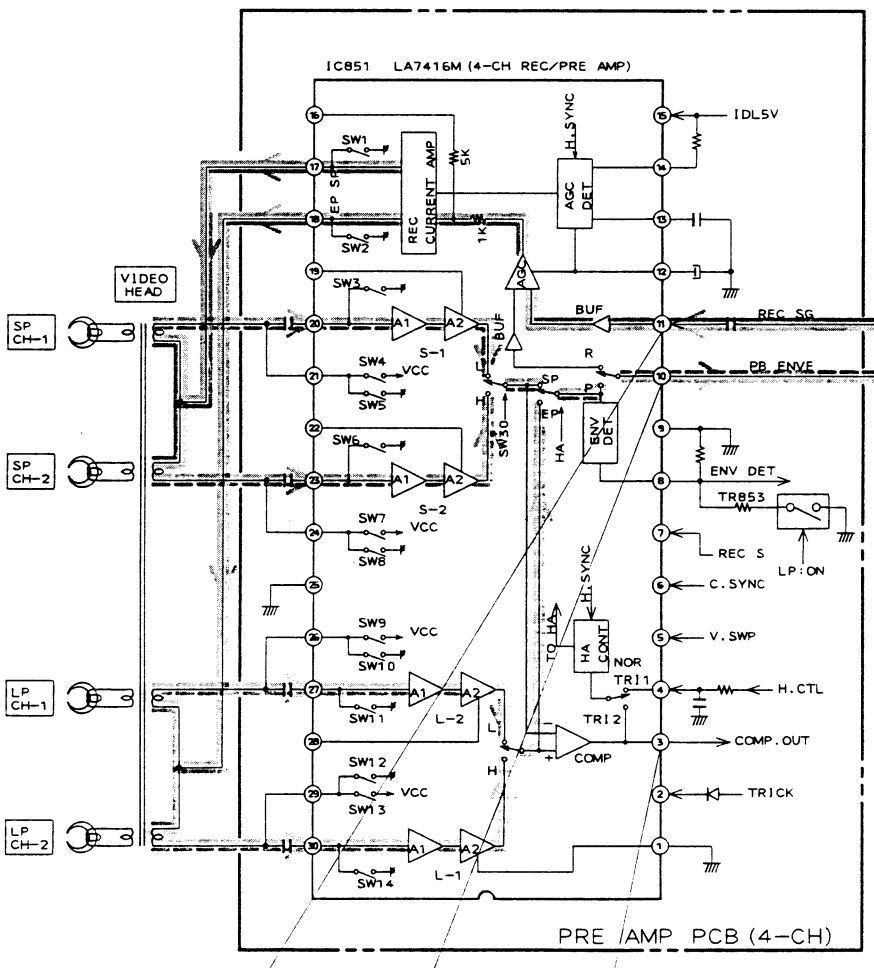
| Ref. No. | Part No. | Description |
|---|---|---|
| 1 | SZ-426915N | HOLDER S/E SENSOR 2 (SG) |
| 2 | SZ-428508N | HOLDER PHOTO SENSOR (SG) |
| 3 | SZ-429350N | HOLDER FLD (SG) |
| 4 | SZ-429351N | HOLDER LED(1) (SG) |

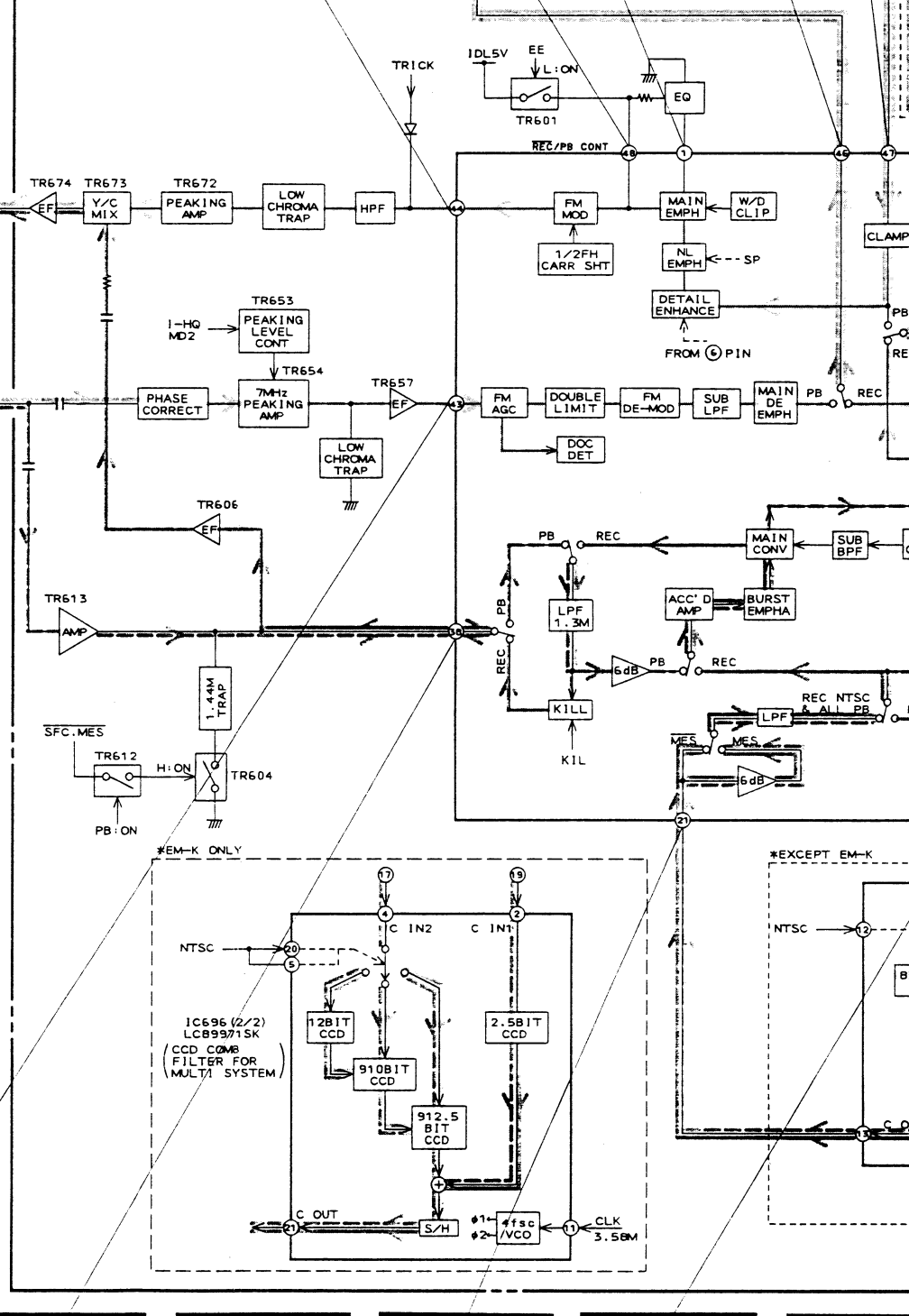
## 7. VIF-EDG BLK (EDG,EM-K)

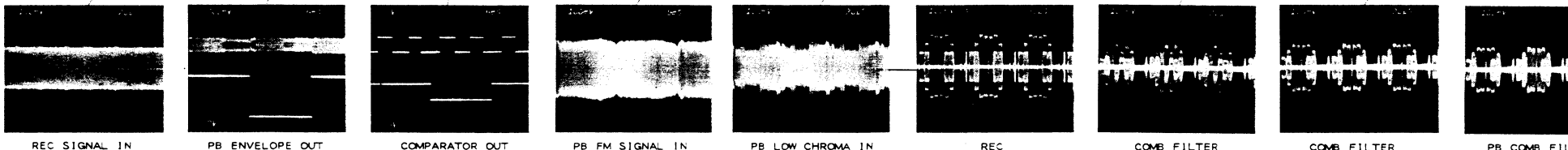
| Ref. No. | Part No. | Description |
|---|---|---|
| FL1 | EH-432627N | FILTER CE SAF38.9MZC70Z |
| FL2-A | EH-414623N | FILTER CE TPS6.5MB-TF21 T05 [EDG] |
| FL2-B | EH-416618N | FILTER CE TPS5.5MB-TF21 T05 [EM-K] |
| FL3 | EH-368948N | FILTER CE TPS5.5MWA 5.5000MHZ |
| FL4 | EH-428045N | FILTER CE TPWA01B 6.000MHZ [EM-K] |
| FL51 | EH-433123N | FILTER CE SFSH6.5MCB-TF21 T05 |
| FL52-A | EH-433121N | FILTER CE SFSH5.5MCB-TF21 T05 [EDG] |
| FL52-B | EH-433122N | FILTER CE SFSH6.0MCB-TF21 T05 [EM-K] |
| FL53 | EH-433122N | FILTER CE SFSH6.0MCB-TF21 T05 |
| FL54 | EH-433121N | FILTER CE SFSH5.5MCB-TF21 T05 [EM-K] |
| IC1 | EI-368809N | IC M51496P |
| L1-A | EO-427373N | COIL FIX 1 EL0405RA T05 1R8J [EDG] |
| L1-B | EO-403936N | COIL FIX 1 EL0405RA T05 1R2J [EM-K] |
| L5-A | EO-416716N | COIL FIX 1 EL0405RA T05 8R2J [EDG] |
| L5-B | EO-428123N | COIL FIX 1 EL0405RA T05 5R6J [EM-K] |
| L6-A | EO-410255N | COIL FIX 1 EL0405RA T05 470J [EDG] |
| L6-B | EO-408956N | COIL FIX 1 EL0405RA T05 390J [EM-K] |
| L51 | EO-416716N | COIL FIX 1 EL0405RA T05 8R2J |
| L52 | EO-408834N | COIL FIX 1 EL0405RA T05 221J |
| TR1 | ET-432740N | TR C.2SC2480 T,S TXT08E |
| TR2 | ET-416932N | TR C.2SB709A R,S TXT08E |
| TR3 | ET-416933N | TR C.2SD601A R,S TXT08E |
| TR4 | ET-416932N | TR C.2SB709A R,S TXT08E |
| TR51 | ET-416933N | TR C.2SD601A R,S TXT08E |
| TR52 | ET-416933N | TR C.2SD601A R,S TXT08E |
| VL2 | EO-432611N | COIL TUN 1 F5001-098 SIF |
| VL3 | EO-432607N | COIL TUN 1 F5001-094 AFT |
| VL4 | EO-432601N | COIL TUN 1 F5001-089 LLD |
| VR1 | EV-432752N | R S-FIX V T05 RH063LC 0.1W 223 |
| X1 | EI-368829N | OSC CE CSB512P |

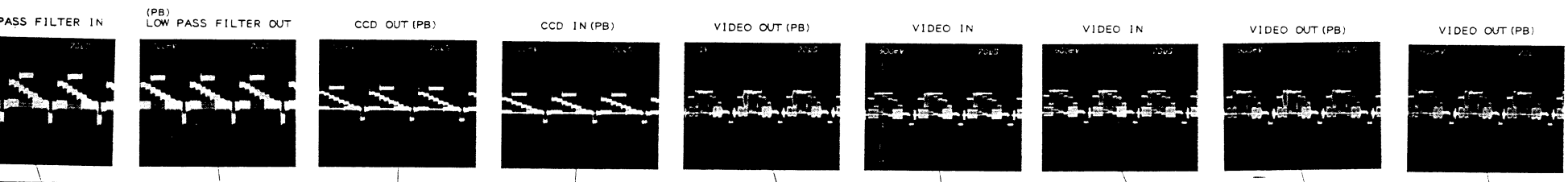

SWITCHING PULSE
ENVELOPE DETECT OUT (LOWER: V.SWP)
PB ENVELOPE OUT (LOWER: V.SWP)
REC SIGNAL IN
REC Y FM SIGNAL
REC MAIN EMPHASIS OUT
EQUALIZER (REC)
(PB) LOW PASS FILTER IN
(PB) LOW PASS FILTER OUT


IC851 LA7411M (2-CH REC/PRE AMP)
IDL5V
REC SG
PB ENVE
ENV DET
REC.S
C.SYNC
V.SWP
VIDEO HEAD
CH-2
CH-1
PRE AMP PCB (2-CH)


IC851 LA7416M (4-CH REC/PRE AMP)
IDL5V
REC SG
PB ENVE
ENV DET
REC S
C.SYNC
V.SWP
H.CTL
COMP.OUT
TRICK
VIDEO HEAD
SP CH-1
SP CH-2
LP CH-1
LP CH-2
PRE AMP PCB (4-CH)


*EM-K ONLY
IC696 (1/2)
LC89971SK
(CCD 1H DELAY LINE)
NTSC
908BIT CCD
6BIT CCD
TR607
TR610
4.43M TRAP
4.0M TRAP
3.58M TRAP
EXCEPT EA, EK
TR608
TR614
SEC.MES
3.58REC
EM-K ONLY
IDL5V
TRICK
EE
L:ON
TR601
EQ
REC/PB CONT
TR674
TR673
TR672
Y/C MIX
PEAKING AMP
LOW CHROMA TRAP
HPF
FM MOD
MAIN EMPH
W/D CLIP
CLAMP
1/2FH CARR SHT
NL EMPH
SP
DETAIL ENHANCE
FROM 6 PIN
TR653
I-HQ MD2
PEAKING LEVEL CONT
TR654
7MHz PEAKING AMP
PHASE CORRECT
TR657
FM AGC
DOUBLE LIMIT
FM DE-MOD
SUB LPF
MAIN DE EMPH
DOC DET
LOW CHROMA TRAP
TR606
TR613
AMP
1.44M TRAP
SEC.MES
TR612
H:ON
TR604
PB:ON
*EM-K ONLY
PB
REC
MAIN CONV
SUB BPF
ACC' D AMP
BURST EMPHA
LPF 1.3M
6dB
KILL
KIL
LPF
REC NTSC & ALL PB
MES
*EXCEPT EM-K
NTSC
C IN2
C IN1
IC696 (2/2)
LC89971SK
(CCD COMB FILTER FOR MULTI SYSTEM)
12BIT CCD
2.5BIT CCD
910BIT CCD
912.5 BIT CCD
C OUT
S/H
fsc /VCO
CLK 3.58M


REC SIGNAL IN (SP MODE)
PB ENVELOPE OUT (LOWER: V.SWP)
COMPARATOR OUT (CUE MODE) (LOWER: V.SWP)
PB FM SIGNAL IN
PB LOW CHROMA IN
REC LOW CHROMA OUT
COMB FILTER OUT (PB)
COMB FILTER IN (2) (PB)
PB COMB FIL IN (1)




# VIDEO BLOCK DIAGRAM

No.4-1 V122251M A1

IC401 M37774MSH (SERVO/SYSTEM CONTROL MI-COM)

*EM-K ONLY
IC696 (1/2)
LC89971SK
(CCD 1H DELAY LINE)

TO PRE AMP PCB

REC. S
V. SWP
H. CTL
COMP OUT
ENV DET

DEC ONLY
C+. DATA
C+. CLK
DEC CTL
I²C. SDA
I²C. SDA

3.5BREC
NP
NTSC
TRICK
I-HQ MD1
I-HQ MD2
I-HQ PWM
EE
EE
C SYNC
C SYNC
CK
S. DET
3.5BREC
EM-K ONLY
C. ROT
VP
SP
S/L/E
SEC. MES
P/S/N
WITHOUT DEC
INT/EXT

TR610
EF
4.43M TRAP
4.0M TRAP
3.58M TRAP
EXCEPT EA, EK
TR608
L: ON
H: ON
SEC. MES
3.5BREC
EM-K ONLY
TR614
IDL 5V

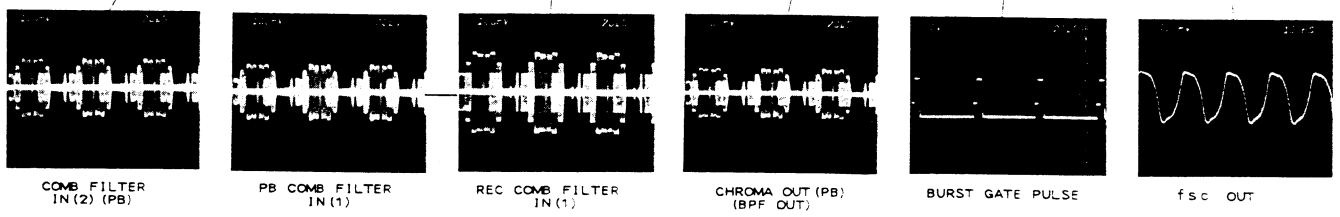
*EXCEPT EM-K
IC697 (1/2)
LC89975M
(CCD 1H DELAY LINE)
843BIT CCD
6BIT CCD
NTSC

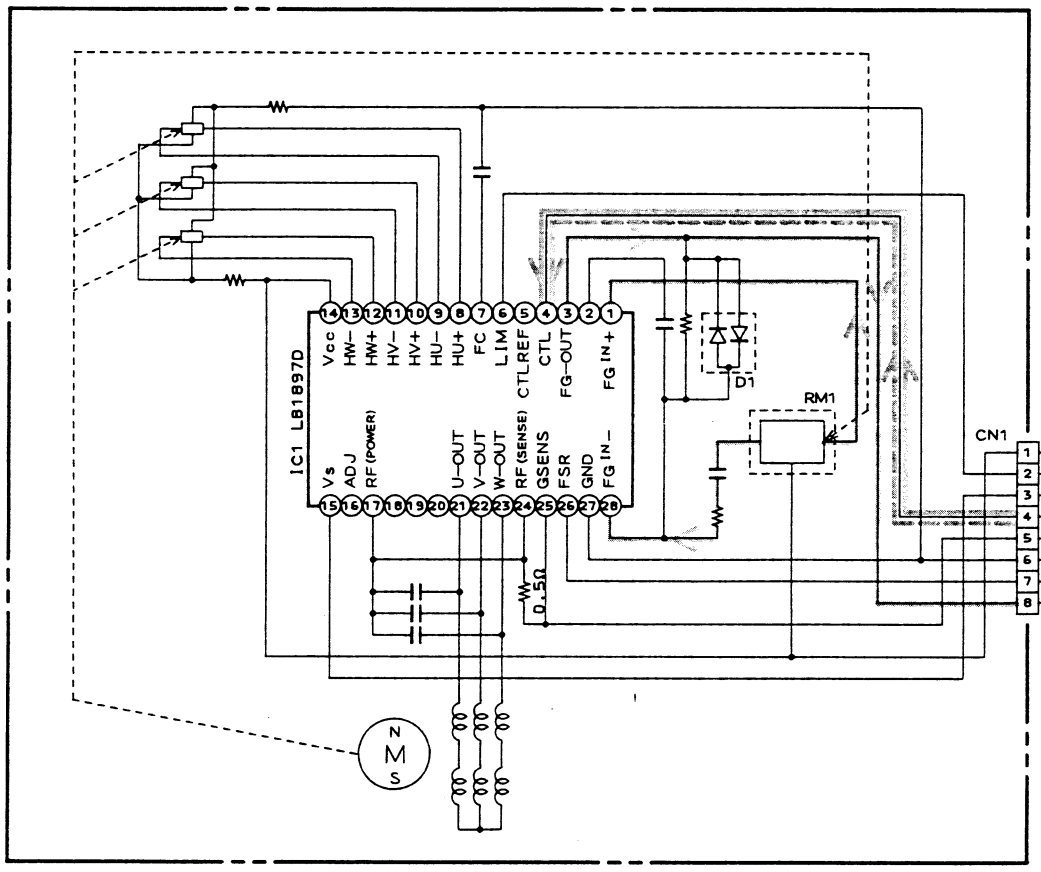
EQ
B CONT
MAIN EMPH
W/D CLIP
NL EMPH
SP
DETAIL ENHANCE
FROM ⑥ PIN
CLAMP
VCA
LPF
DOC
NOR
ATT
REC
PB
SP
DETAIL ENHANC
YNR
LPF
C. SYNC OUT
C. KILL
3.58 REC
C. ROT IN
VP IN
TAPE SPEED SELECT
VIDEO SYSTEM CONTROL
SP: L, LP: M, EP: H
PAL: L, MESECAM: M
NTSC: H
IC407 SDA5649X
(VPS/PDC DECODER)
SCL
SDA
CVBS
VPS/PDC MODELS ONLY
NL DE-EMPH
DOUBLE HP NOICAN
PICT CONT
Y/C MIX
3.5M LPF
LIM
K1
CORR
LIM
K2
6dB
SYNC SEPA
QV/QH INSRT & W/D CLIP
VIDEO AMP
VIDEO AGC
AGC DET
DELAY
1/2
FM DE-MOD
SUB LPF
MAIN DE EMPH
SUB BPF
SUB CONV
4PHASE SHIFTER
4.43M BPF
C. ROT
IC601
EM-K: LA7440M
EXCEPT EM-K:
LA7447BM
ACC' D AMP
BURST EMPHA
6dB
PB AMP BU. DE-EM KILLER
REC NTSC & ALL PB
REC NTSC
LPF
MES
INVERT
6dB
2fsc
NAP
NTSC
(NTSC→PAL)
FSC BPF
P/S DET
CHROMA N. CAN
7447 ONLY
7440 ONLY
BGP GEN
HALF H KILLER
EM-K ONLY
X602
4.43MHz
NAP/NOR
XO IN
XO OUT
X601
EXCEPT EM-K: 4.43MHz
EM-K: 3.58MHz
EDG. EM, EM-K ONLY
IC751 LA7356
(SECAM DETECT)
GATE
BGP
V. IN
fsc
DET OUT
S. DET
TR603
*EXCEPT EM-K
C IN2
C IN1
NTSC
858BIT CCD
1H
2.5BIT CCD
847BIT CCD
1H
C OUT
S/H
3fsc VCO
CLK 4.43M
*IC697 (2/2) LC89975M
1H/2H DELAY
(CCD COMB FILTER)
CLK 3.58M

LOGIC CONTROL
LATCH
SW1-4
IDL 12V
TR902
L: ON
TV MONITOR
TR904
6dB AMP
BUFF
SW4
(V-OUT)
(TV CONT)
(V-IN)
P901
DECODER
BUFF
SW1, 2
SW3
(V-IN)
(DEC-CTL)
TR903
6dB AMP
BUFF
(V-OUT)
P902
IC902 BA7630S
(VIDEO SELECTOR)
TR901
INV
CANAL PLUS PCB (DEC ONLY)
DEC ONLY
TR602
EF
WITHOUT DEC
EXCEPT EA, EM
PJ102
TR101
JS655
INT/EXT
EXT. V. IN
INT. V. IN
IC101
MM1111XF
V. OUT
V. IN
V. IN
V. OUT
PJ101
EA, EM ONLY
TR11
EF
IF1 V. OUT
VIF PCB
TU1
TUNER UNIT
ANT. IN
MD1
RF CONVERTER
V. OUT
A. OUT
WITHOUT DEC
PATTERN
TR14
DEC ONLY

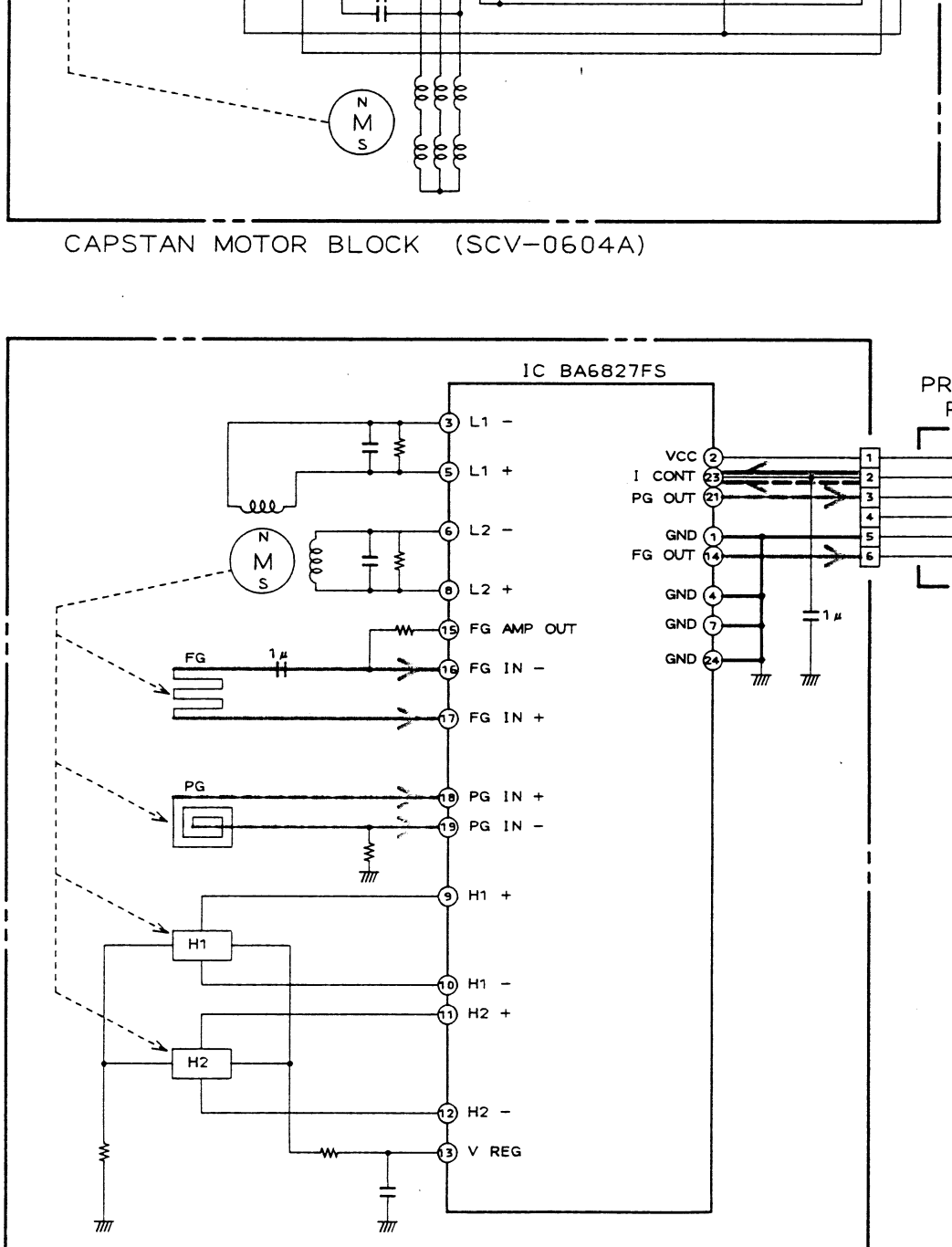
MAIN PCB

PB Y SIGNAL LINE
REC/EE Y SIGNAL LINE
PB CHROMA SIGNAL LINE
REC/EE CHROMA SIGNAL LINE




IC1 LB1897D
Vcc HW− HW+ HV− HV+ HU− HU+ FC LIM CTL REF CTL FG−OUT FG IN+
Vs ADJ RF (POWER) U−OUT V−OUT W−OUT RF (SENSE) GSENS FSR GND FG IN−
D1
RM1
0.5Ω
N
M
S

CAPSTAN MOTOR BLOCK (SCV-0604A)




DRUM MOTOR BLOCK (E20XL16)

PRE AMP PCB

CN1

P401

| | | |
|---|---|---|
| 8 | IDL5V | IDL5V |
| 7 | CM LIMIT | |
| 6 | CM 14V | CM 14V |
| 5 | CM CONT | |
| 4 | M. GND | M. GND |
| 3 | GND | GND |
| 2 | F/R | FWD/REV (DIRECTION CONTROL) |
| 1 | CM. FG | |

IDL5V

IC402 (2/2)

LPF

TR405

(CM ON/OFF CONTROL)

H: ON

CM 14V

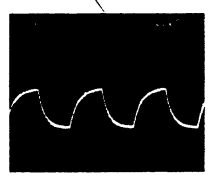
DM12V

IC402 (1/2)
NJM4558M

LPF

P601

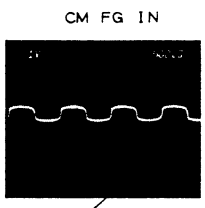
| | | |
|---|---|---|
| 6 | DM 12V | |
| 4 | DM CONT | |
| 3 | DM PG | |
| 2 | M GND | |
| 1 | M GND | M. GND |
| 5 | DM FG | |

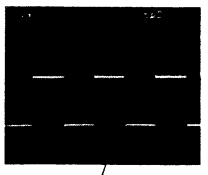


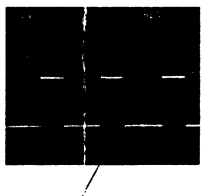
DM FG IN

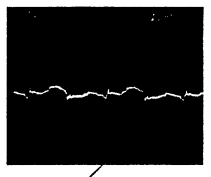
DM

NOTE: PHOTOGRAPHS EXCEPT [REC CTL OUT] WERE TAKEN DURING PB MODE.
EXCEPT [REC CTL OUT], PHOTOGRAPH' S SECOND LINE FROM THE BOTTOM IS DC 0V.


CM FG IN


CM ERROR OUT


DM ERROR OUT


ENV DETECT IN

IC401 M37774M5H
(SYSTEM CONTROL & SERVO MI-COM)

(DIRECTION CONTROL) 61 F/R
68 CM FG (SPEED)
(AUTO TRACKING CONT) 92 ENV DET

LPF 3 CM PWM
CM PHASE/SPEED ERROR DETECT
(PB) (PHASE)
REC /PB SW
78 CTL-
77 CTL+
WF302 5 6
CONTROL HEAD
(REC)
25Hz F.F

62 CM STOP

V.SYNC SEPA
93 C SYNC
FROM IC601 9 PIN (SYNC OUT)
8 C SYNC

LPF 4 DM PWM
V SWP 14 TO PRE AMP

66 DM PG (PHASE)
67 DM FG (SPEED)
DM PHASE/SPEED ERROR DETECT

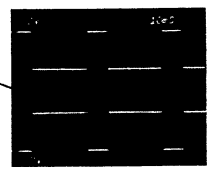
CTL AMP OUT 73
CLAMP R 72
CLAMP F 71
TR401 CTL

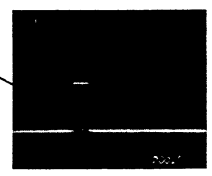
X IN 38
X OUT 39
XC IN 42
XC OUT 43
SYS SO 98
SYS SI 99
SYS CLK 100
SYS RDY 1

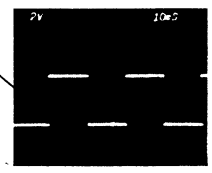
X401 16MHz
X402 32.768K

TR409
H:ON
CTL GAIN
CTL AMP GAIN CONTROL

VIDEO HEAD
IC851 LA7411M /LA7416M
PRE AMP
V SWP
ENV DET OUT
PRE AMP PCB


REC CTL OUT
(UPPER: CTL+
LOWER: CTL-)


C SYNC IN

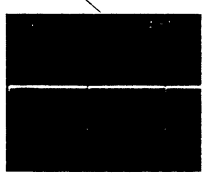

SWITCHING PULSE OUT


CTL AMP OUT

MAIN PCB

6 SCL
5 SDA
8 SYS CLK
9 SYS RDY
IC405 μPD16312GB
(OPE MI-COM)

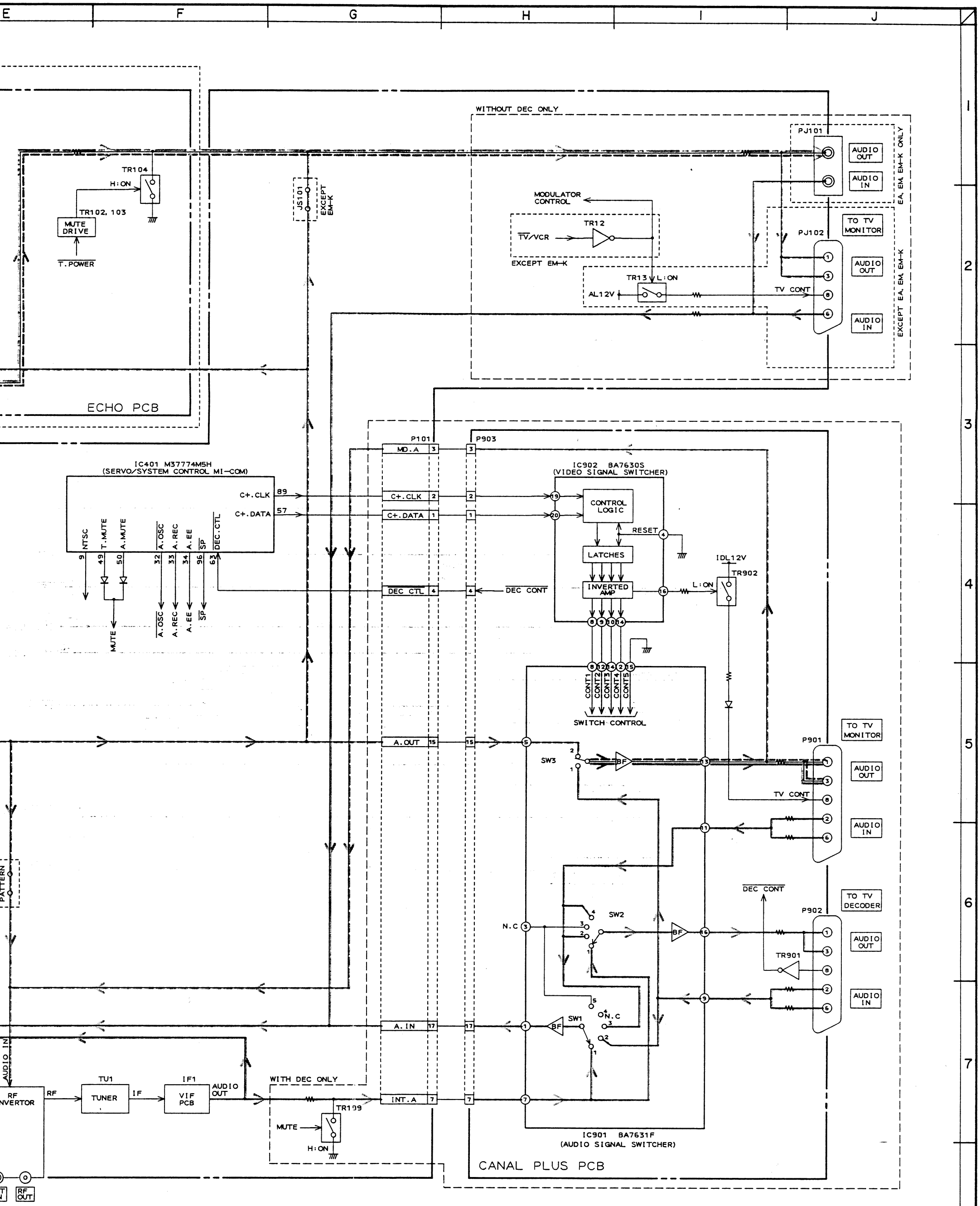
DM FG IN


DM PG IN

:CAPSTAN MOTOR SPEED CONTROL LINE
:CAPSTAN MOTOR PHASE CONTROL LINE
:DRUM MOTOR SPEED CONTROL LINE
:DRUM MOTOR PHASE CONTROL LINE

# SERVO BLOCK DIAGRAM

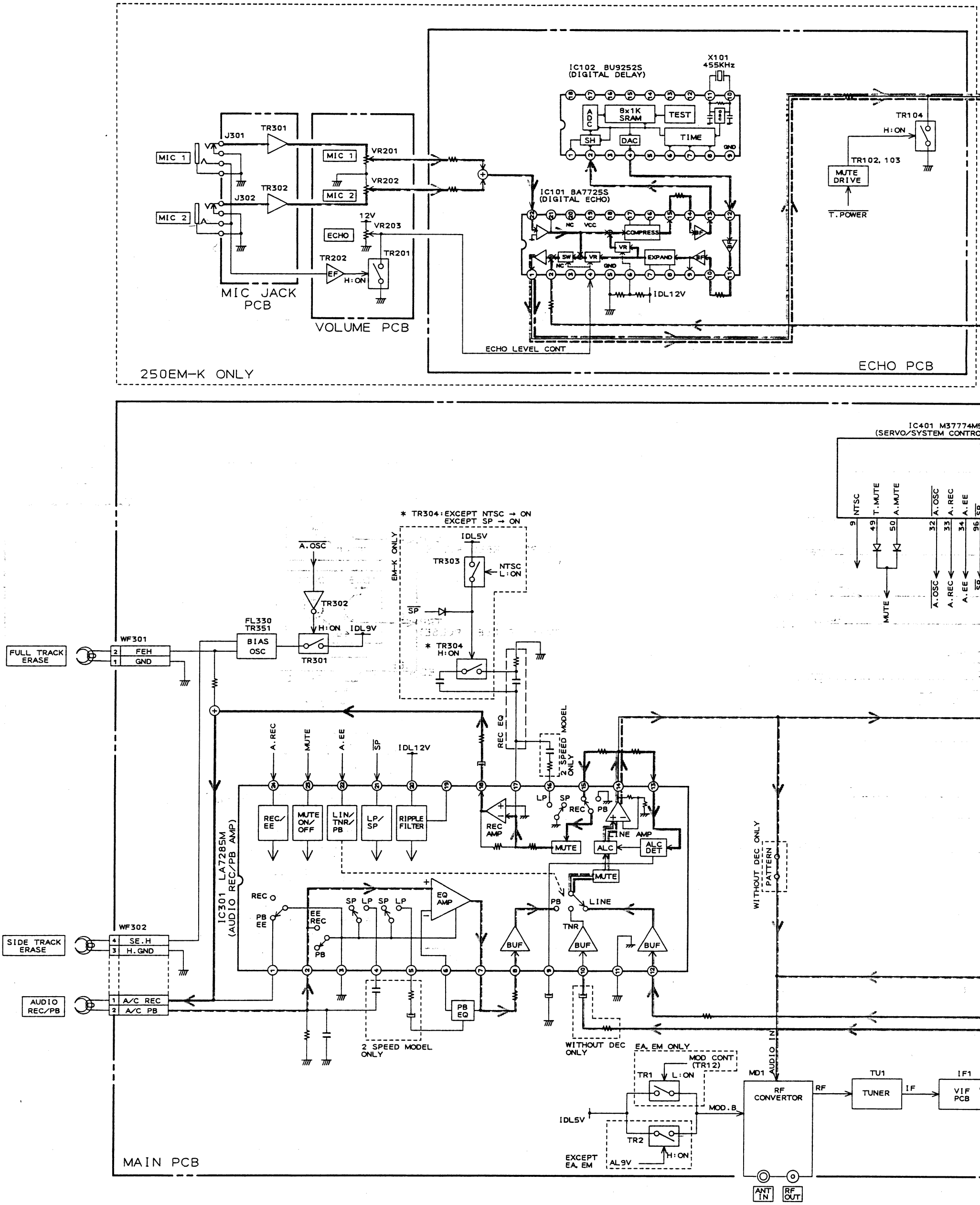
No.4-2 V122252M
A1




# AUDIO BLOCK DIAGRAM

No.4-4 V122254M

A1


MIC JACK PCB
VOLUME PCB
ECHO PCB
250EM-K ONLY
MIC 1
MIC 2
J301
J302
TR301
TR302
VR201
VR202
VR203
12V
ECHO
TR201
TR202
EF
H:ON
IC102 BU9252S (DIGITAL DELAY)
X101 455KHz
ADC
8x1K SRAM
TEST
SH
DAC
TIME
GND
IC101 BA7725S (DIGITAL ECHO)
NC
VCC
COMPRESS
EXPAND
VR
SW
BF
IDL12V
ECHO LEVEL CONT
TR104
H:ON
TR102, 103
MUTE DRIVE
T.POWER
* TR304:EXCEPT NTSC → ON
EXCEPT SP → ON
EM-K ONLY
IDL5V
TR303
NTSC L:ON
SP
* TR304 H:ON
A.OSC
TR302
H:ON
IDL9V
FL330 TR351
BIAS OSC
TR301
WF301
FULL TRACK ERASE
2 FEH
1 GND
IC401 M37774M5
(SERVO/SYSTEM CONTRO
NTSC
T.MUTE
A.MUTE
A.OSC
A.REC
A.EE
MUTE
IC301 LA7285M (AUDIO REC/PB AMP)
A.REC
MUTE
A.EE
SP
IDL12V
REC EQ
2 SPEED MODEL ONLY
REC/ EE
MUTE ON/ OFF
LIN/ TNR/ PB
LP/ SP
RIPPLE FILTER
REC AMP
LP
SP
REC
PB
LINE AMP
MUTE
ALC
ALC DET
EQ AMP
EE REC
PB EE
PB EQ
BUF
LINE
TNR
WITHOUT DEC ONLY
PATTERN
WF302
SIDE TRACK ERASE
4 SE.H
3 H.GND
AUDIO REC/PB
1 A/C REC
2 A/C PB
2 SPEED MODEL ONLY
WITHOUT DEC ONLY
EA, EM ONLY
MOD CONT (TR12)
TR1
L:ON
MOD.B
IDL5V
TR2
H:ON
EXCEPT EA, EM
AL9V
MD1
AUDIO IN
RF CONVERTOR
RF
TU1
TUNER
IF
IF1
VIF PCB
ANT IN
RF OUT
MAIN PCB

MODE SWITCH TRUTH TABLE

| OUTPUT \ MODE | EJECT | STOP (TAPE LOADED) | PAUSE/PLAY | PLAY | REVIEW | CUE | FF | REW | POWER OFF (WITH CASSETTE) |
|---|---|---|---|---|---|---|---|---|---|
| RSW4 | H (5V) | H | H | H | H | H | L | L | H |
| RSW3 | H (5V) | L | H | L | H | L | L | L | L |
| RSW2 | L | H | H | H | L | H | H | H | L |
| RSW1 | L | H | L | H | H | H | H | L | H |

LPF
+32V
TR3
CURR CONT
+38V
(FROM POWER SUPPLY)
IC1 L5631
TR4

VIDEO CIRCUIT CONTROL

NP 7
NTSC 9
LTV/VCR 46
C.SYNC 8,93
EE 10
REC S 12
VP 13
V.SWP 14
C.ROT 15
T-HQ PWM 18
S/L/E 19
DEC INT/EXT 45
C+.DATA 57
DEC_CTL 63
T.POWER 60
S.DET 83
C-KILLER 84
I-HQ MD1 87
EM-K ONLY L3.5B_REC 88
INT/EXT (C+.CLK) 89
P/S/N 94
SEC.MES 95
SP 96
EE 97

2 TU PWM
42 XC IN
X402 32.768KHz
43 XC OUT
38 X IN
X401 16MHz
39 X OUT
56 BAND A
55 BAND B
90 AFT
54 AFT
47 I²C SDA
48 I²C SCL
214
21 SHORT
9.1K 9.1K AL 9V
58 VPS RDY
37 RESET
26.81 VCC
20 P.DOWN
XCEPT EM-K
TR12
46 TV/VCR

WITHOUT DEC
DEC ONLY
EM-K ONLY

IC401
M37774M5H
(SYSTEM CONTROL & SERVO MI-COM)

A.EE2 31
A.OSC 32
A.REC 33
SP 96
AUDIO CIRCUIT CONTROL

SYS RDY 1
SYS SO 98
SYS CLK 100
SYS SI 99
T.POWER 60
AL 9V or 12V CONTROL

T MUTE 49
A MUTE 50
MUTE → AUDIO CIRCUIT

LM.F 28
LM.R 29
TRQUP 27
L:ON
TR406
6.2V

IC403
LB1641
(MOTOR DRIVER)
Vcc 7
Vcc 8
LM.F 5
LM.R 6
Vref 4
LM+ 2
LM- 10
LM14V
FR401
LOADING MOTOR

RSW1~4 22~25
MODE SW MECHA. POSITION DETECT
LM/MS PCB

SRP 5
(SUPPLY REEL PULSE)
IDL5V D403
TR404

TRP 6
(TAKE UP REEL PULSE)
IDL5V D402
TR403

ES 85
TR402
D401
IDL5V
SS 86
TR401

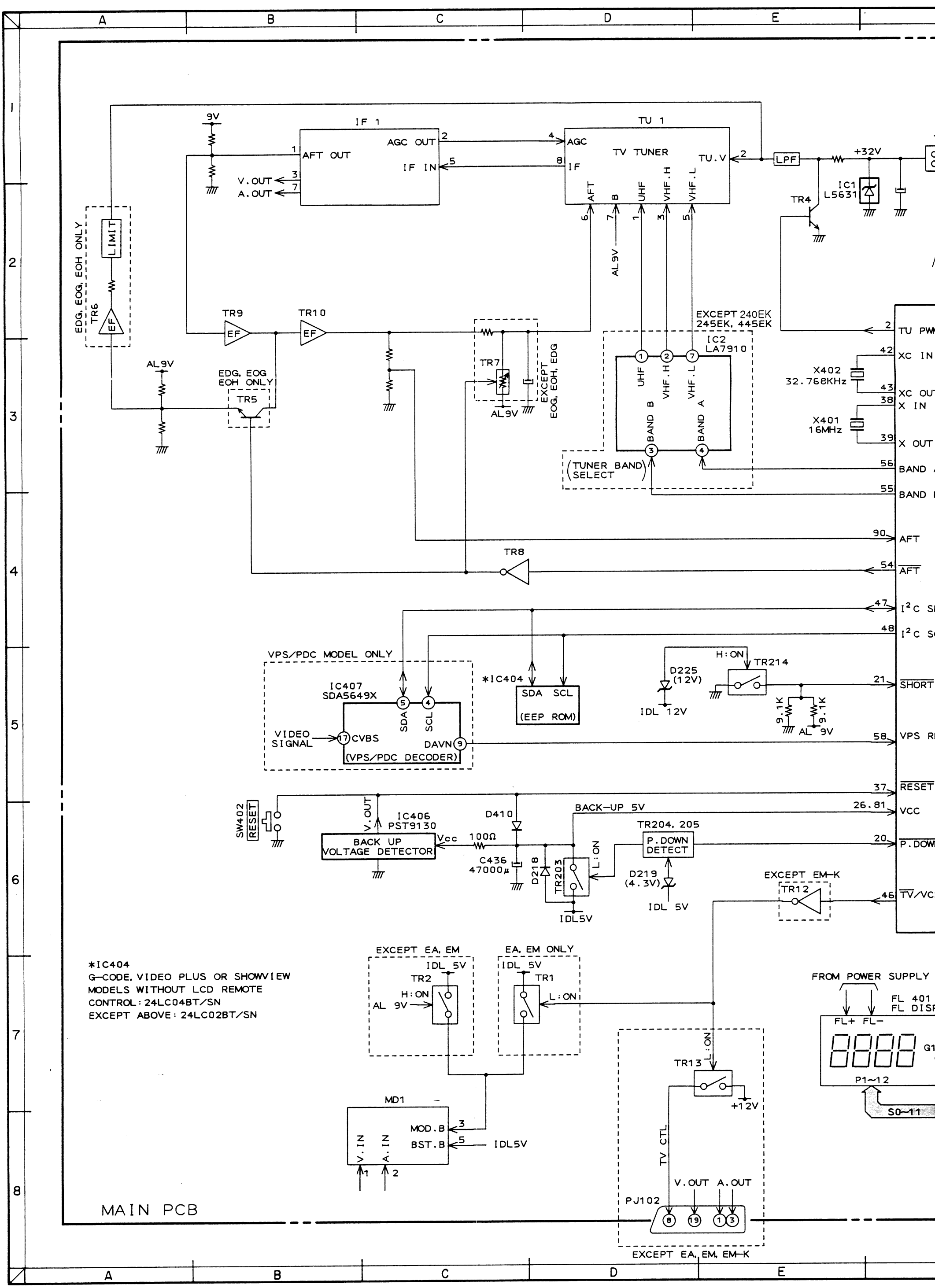
REC SAF 59
SW401
REC SAFETY SW
(ON→REC ENABLE)

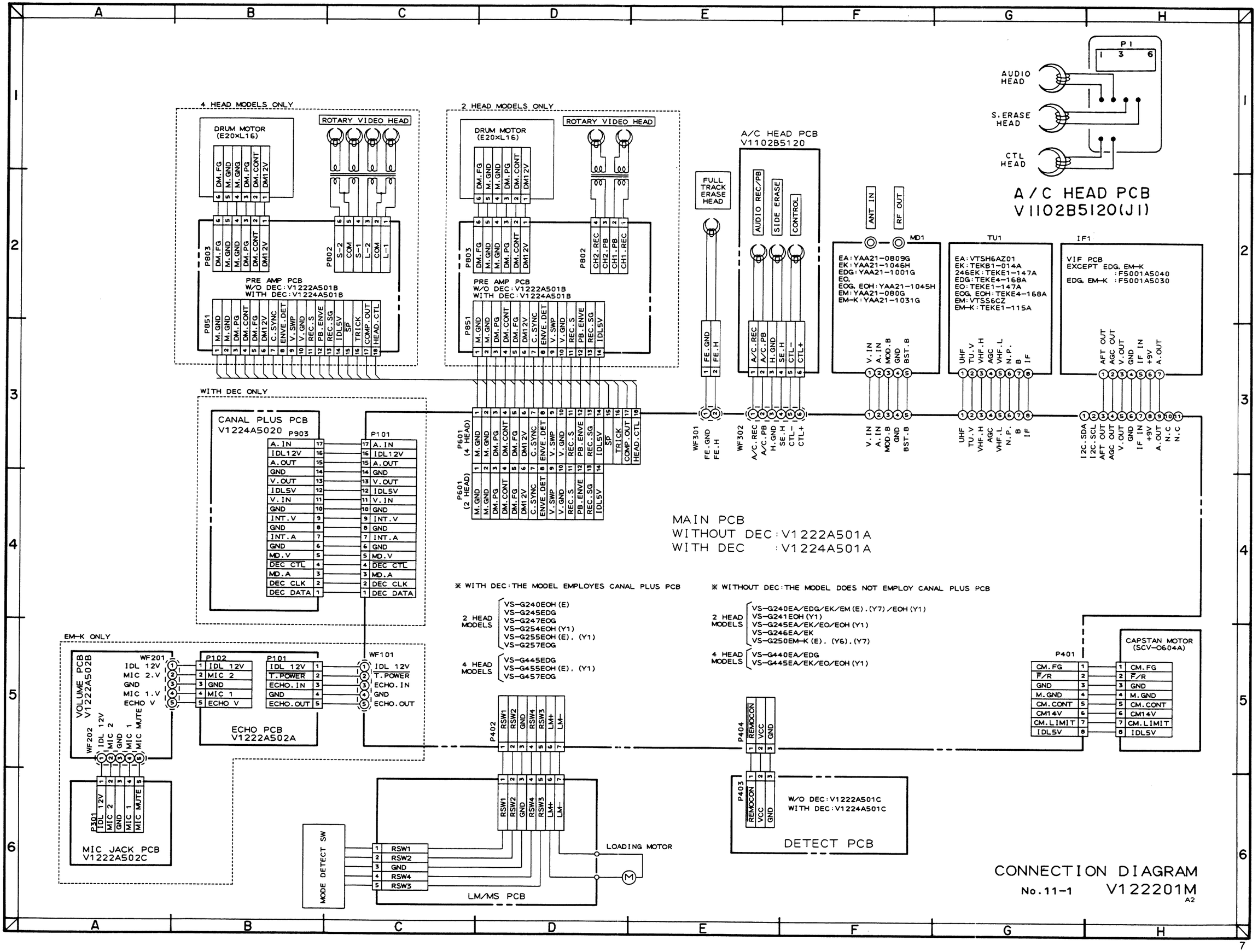
REMOCON 11
PH401
REMOCON SIG.DET
DETECT PCB

FROM POWER SUPPLY
FL 401
FL DISPLAY
FL+ FL-
G1~10
P1~12
28~37
T0~9
IC405
μPD16312GB
(OPERATION MI-COM)
S0~11
KEY1~4
15~26
10~13
S0~11
S0, 1
RDY SI CLK SO
(KEY MATRIX)

OPERATION & SYSCON
BLOCK DIAGRAM
No.4-3 V122253M
A1

5

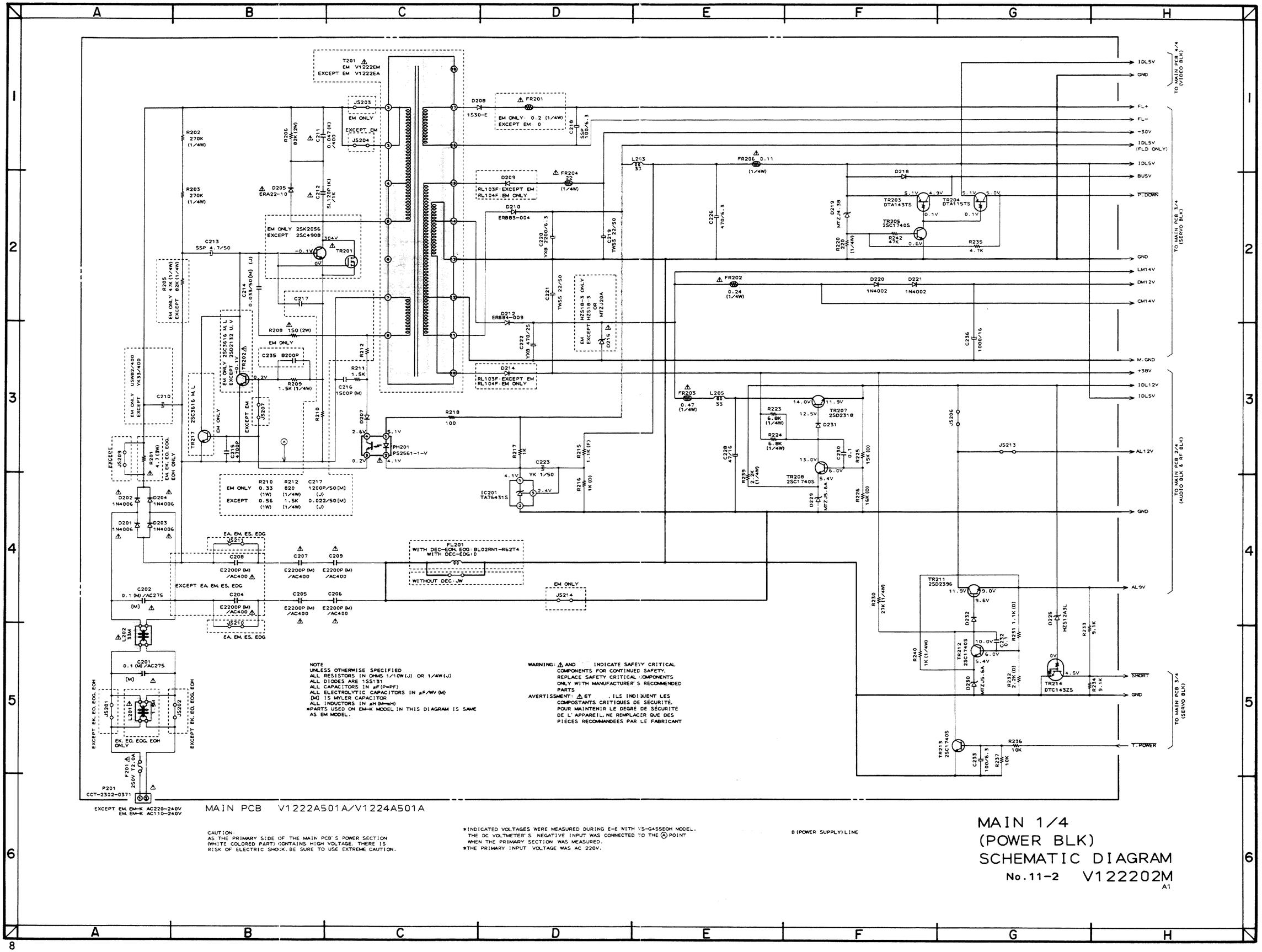

IF 1
AFT OUT
AGC OUT
IF IN
V.OUT
A.OUT
TU 1
TV TUNER
AGC
IF
TU.V
AFT
B
UHF
VHF.H
VHF.L
9V
AL9V
LPF
+32V
IC1
L5631
TR4
LIMIT
TR6
EF
EDG, EOG, EOH ONLY
TR9
TR10
TR7
EXCEPT EOG, EOH, EDG
TR5
EDG, EOG EOH ONLY
EXCEPT 240EK 245EK, 445EK
IC2
LA7910
BAND B
BAND A
(TUNER BAND SELECT)
X402
32.768KHz
X401
16MHz
TU PWM
XC IN
XC OUT
X IN
X OUT
BAND A
BAND B
AFT
TR8
I²C SI
I²C SC
VPS/PDC MODEL ONLY
IC407
SDA5649X
SDA
SCL
VIDEO SIGNAL
CVBS
DAVN
(VPS/PDC DECODER)
*IC404
SDA SCL
(EEP ROM)
H:ON
TR214
D225
(12V)
IDL 12V
9.1K
AL 9V
SHORT
VPS R
SW402
RESET
V.OUT
IC406
PST9130
BACK UP VOLTAGE DETECTOR
Vcc
100Ω
D410
C436
47000μ
D218
TR203
L:ON
BACK-UP 5V
TR204, 205
P.DOWN DETECT
D219
(4.3V)
IDL 5V
IDL5V
EXCEPT EM-K
TR12
TV/VC
RESET
VCC
P.DOW
FROM POWER SUPPLY
FL 401
FL DISP
FL+ FL-
P1~12
S0~11
EXCEPT EA, EM
EA, EM ONLY
TR2
TR1
H:ON
L:ON
AL 9V
MD1
MOD.B
BST.B
V.IN
A.IN
TR13
+12V
TV CTL
V.OUT A.OUT
PJ102
EXCEPT EA, EM, EM-K
*IC404
G-CODE, VIDEO PLUS OR SHOWVIEW
MODELS WITHOUT LCD REMOTE
CONTROL: 24LC04BT/SN
EXCEPT ABOVE: 24LC02BT/SN
MAIN PCB




CONNECTION DIAGRAM

No.11-1 V122201M

A2




NOTE
UNLESS OTHERWISE SPECIFIED
ALL RESISTORS IN OHMS 1/10W(J) OR 1/4W(J)
ALL DIODES ARE 1SS131
ALL CAPACITORS IN μF(P=PF)
ALL ELECTROLYTIC CAPACITORS IN μF/WV (M)
(M) IS MYLER CAPACITOR
ALL INDUCTORS IN μH (M=mH)
*PARTS USED ON EM-K MODEL IN THIS DIAGRAM IS SAME AS EM MODEL.

WARNING: ⚠ AND [illegible] INDICATE SAFETY CRITICAL COMPONENTS FOR CONTINUED SAFETY, REPLACE SAFETY CRITICAL COMPONENTS ONLY WITH MANUFACTURER'S RECOMMENDED PARTS
AVERTISSEMENT: ⚠ ET [illegible], ILS INDIQUENT LES COMPOSTANTS CRITIQUES DE SÉCURITÉ. POUR MAINTENIR LE DEGRÉ DE SÉCURITÉ DE L'APPAREIL, NE REMPLACER QUE DES PIÈCES RECOMMANDEES PAR LE FABRICANT

MAIN PCB V1222A501A/V1224A501A

CAUTION
AS THE PRIMARY SIDE OF THE MAIN PCB'S POWER SECTION (WHITE COLORED PART) CONTAINS HIGH VOLTAGE. THERE IS RISK OF ELECTRIC SHOCK. BE SURE TO USE EXTREME CAUTION.

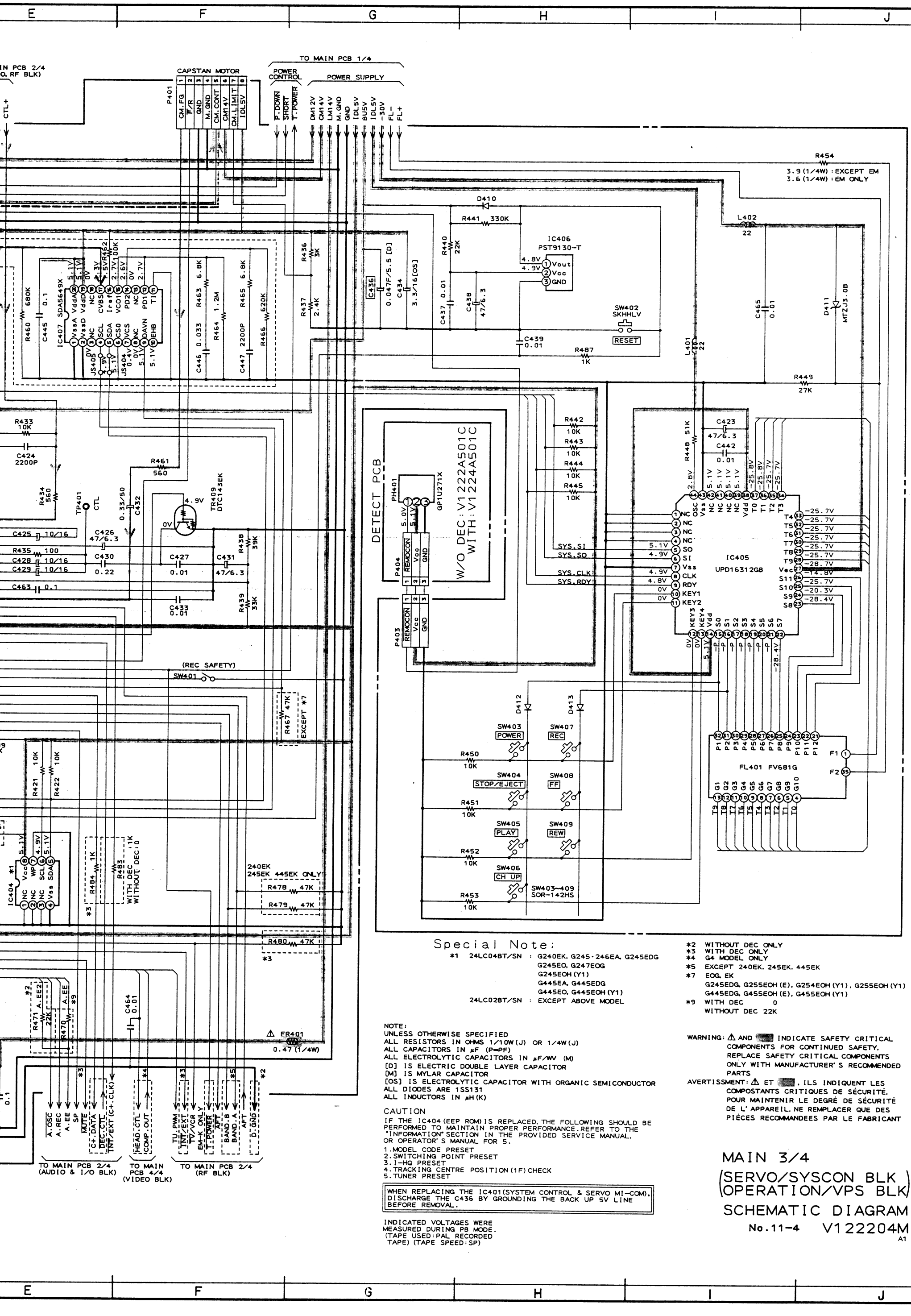
*INDICATED VOLTAGES WERE MEASURED DURING E-E WITH VS-G455EOH MODEL. THE DC VOLTMETER'S NEGATIVE INPUT WAS CONNECTED TO THE Ⓐ POINT WHEN THE PRIMARY SECTION WAS MEASURED.
*THE PRIMARY INPUT VOLTAGE WAS AC 220V.

B (POWER SUPPLY) LINE

# MAIN 1/4 (POWER BLK) SCHEMATIC DIAGRAM

No.11-2 V122202M
A1

TO MAIN PCB 4/4 (VIDEO BLK)
EE
SP
SEC.MES
P/S/N
C.SYNC
ENV.DET
TRICK
NTSC
NP
3.58REC
*10
C.KILL
S.DET
V.IN
*10:EM-K ONLY
TO MAIN PCB 4/4 (VIDEO BLK)
DM.CONT
M.GND
DM.FG
DM.PG
DM12V
TO MAIN PCB 2/4 (AUDIO, RF BLK)
CTL-
CTL+
P401
CM.FG
NTSC
I-HQ MD1
EE
REC.S
VP
V.SWP
C.ROT
I-HQ.PWM
S/L/E
I-HQ MD2
TO MAIN PCB 4/4 (VIDEO BLK)
IC401
M37774M5H
EXCEPT
EK, EOG: 389GP NXGSYPS1
EOG: 391GP NXGSYGS1
EK : 390GP NXGSYPV1
( ) ··WITH DEC MODEL
SYS.RDY
TU.PWM
CM.PWM
DM.PWM
SRP
TRP
NP
C.SYNC
NTSC
EE
REMOCON
REC.S
VP
V.SWP
C.ROT
HEAD.CTL
COMP.OUT
I-HQ.PWM
S/L/E
P.DOWN
SHORT
RSW4
RSW3
RSW2
RSW1
Vcc
TRQUP
LM.F
LM.R
NC
SYS.CLK
SYS.SI
SYS.SO
EE
SP
SEC.MES
P/S/N
C.SYNC
ENV.DET
TRICK
AFT
INT/EXT (C+.CLK)
3.58REC (B.W/SEC)
I-HQ.MD1
SS
ES
CK
S.DET
Vref
Vcc
AMP.Vss
CTL.Vss
CTL-
CTL+
CTL+SWOUT
CTLAMP.IN
AMP.C
CTLAMP.OUT
CLAMPR
CLAMPF
AMP.Vref.IN
AMP.Vref.OUT
CM.FG
DM.FG
DM.PG
AMP.Vcc
CTL.GAIN
DEC.CTL
CM.STOP
F/R
T.POWER
REC.SAF
VPS.RDY
NC (C+. DATA)
BAND.A
BAND.B
AFT
NC (V.J)
A.EE2
A.OSC
A.REC
A.EE
NUA
NUA
RESET
X IN
X OUT
CLK.SEL
Vss
Xc in
Xc out
NC
INT/EXT
TV/VCR (NC)
I²C.SDA
I²C.SCL
T.MUTE
A.MUTE
I-HQ.MD2
V.SYNC.MON
IC407 SDA5649X
VddA
VssA
VddD
VssD
NC
NC
SCL
SDA
CVBS
CS0
Iref
VCO1
PD2
VCS
NC
NC
PD1
DAVN
TI
EHB
IC404
Vcc
WP
SCL
SDA
NC
NC
NC
Vss
IC403 LB1641
GND
LM+
P1
V ref
LM.F
LM.R
VCC1
VCC2
P2
LM-
TP401
CTL
TP402
LM+
LM-
TP403
TR401 PT493F
TR402 PT493F
TR403 PT4800
TR404 PT4800
TR406 2SA933S OR 2PA733
D401 GL528VTB
D402 GL4800
D403 GL4800
D404 MTZJ6.2C
X401 APS-1011A 16MHz
X402 C-002RX 32.768KHz
P402
RSW1
RSW2
GND
RSW4
RSW3
LM+
LM-
TO LM/MS PCB
MAIN PCB V1222A501A/V1224A501A
TO MAIN PCB 2/4 (AUDIO & I/O BLK)
TO MAIN PCB 4/4 (VIDEO BLK)
B (POWER SUPPLY) LINE
CAPSTAN MOTOR PHASE CONTROL LINE
CAPSTAN MOTOR SPEED CONTROL LINE
DRUM MOTOR PHASE CONTROL LINE
DRUM MOTOR SPEED CONTROL LINE
VIDEO SIGNAL LINE




## Special Note:

*1 24LC04BT/SN : G240EK, G245·246EA, G245EDG
G245EO, G247EOG
G245EOH (Y1)
G445EA, G445EDG
G445EO, G445EOH (Y1)
24LC02BT/SN : EXCEPT ABOVE MODEL

*2 WITHOUT DEC ONLY
*3 WITH DEC ONLY
*4 G4 MODEL ONLY
*5 EXCEPT 240EK, 245EK, 445EK
*7 EOG, EK
G245EDG, G255EOH (E), G254EOH (Y1), G255EOH (Y1)
G445EDG, G455EOH (E), G455EOH (Y1)
*9 WITH DEC 0
WITHOUT DEC 22K

NOTE:
UNLESS OTHERWISE SPECIFIED
ALL RESISTORS IN OHMS 1/10W (J) OR 1/4W (J)
ALL CAPACITORS IN μF (P=PF)
ALL ELECTROLYTIC CAPACITORS IN μF/WV (M)
[D] IS ELECTRIC DOUBLE LAYER CAPACITOR
[M] IS MYLAR CAPACITOR
[OS] IS ELECTROLYTIC CAPACITOR WITH ORGANIC SEMICONDUCTOR
ALL DIODES ARE 1SS131
ALL INDUCTORS IN μH (K)

CAUTION
IF THE IC404 (EEP ROM) IS REPLACED, THE FOLLOWING SHOULD BE PERFORMED TO MAINTAIN PROPER PERFORMANCE. REFER TO THE "INFORMATION" SECTION IN THE PROVIDED SERVICE MANUAL, OR OPERATOR'S MANUAL FOR 5.
1. MODEL CODE PRESET
2. SWITCHING POINT PRESET
3. I-HQ PRESET
4. TRACKING CENTRE POSITION (1F) CHECK
5. TUNER PRESET

WHEN REPLACING THE IC401 (SYSTEM CONTROL & SERVO MI-COM), DISCHARGE THE C436 BY GROUNDING THE BACK UP 5V LINE BEFORE REMOVAL.

INDICATED VOLTAGES WERE MEASURED DURING PB MODE.
(TAPE USED: PAL RECORDED TAPE) (TAPE SPEED: SP)

WARNING: ⚠ AND ▬ INDICATE SAFETY CRITICAL COMPONENTS FOR CONTINUED SAFETY. REPLACE SAFETY CRITICAL COMPONENTS ONLY WITH MANUFACTURER'S RECOMMENDED PARTS

AVERTISSMENT: ⚠ ET ▬, ILS INDIQUENT LES COMPOSTANTS CRITIQUES DE SÉCURITÉ. POUR MAINTENIR LE DEGRÉ DE SÉCURITÉ DE L'APPAREIL, NE REMPLACER QUE DES PIÈCES RECOMMANDEES PAR LE FABRICANT

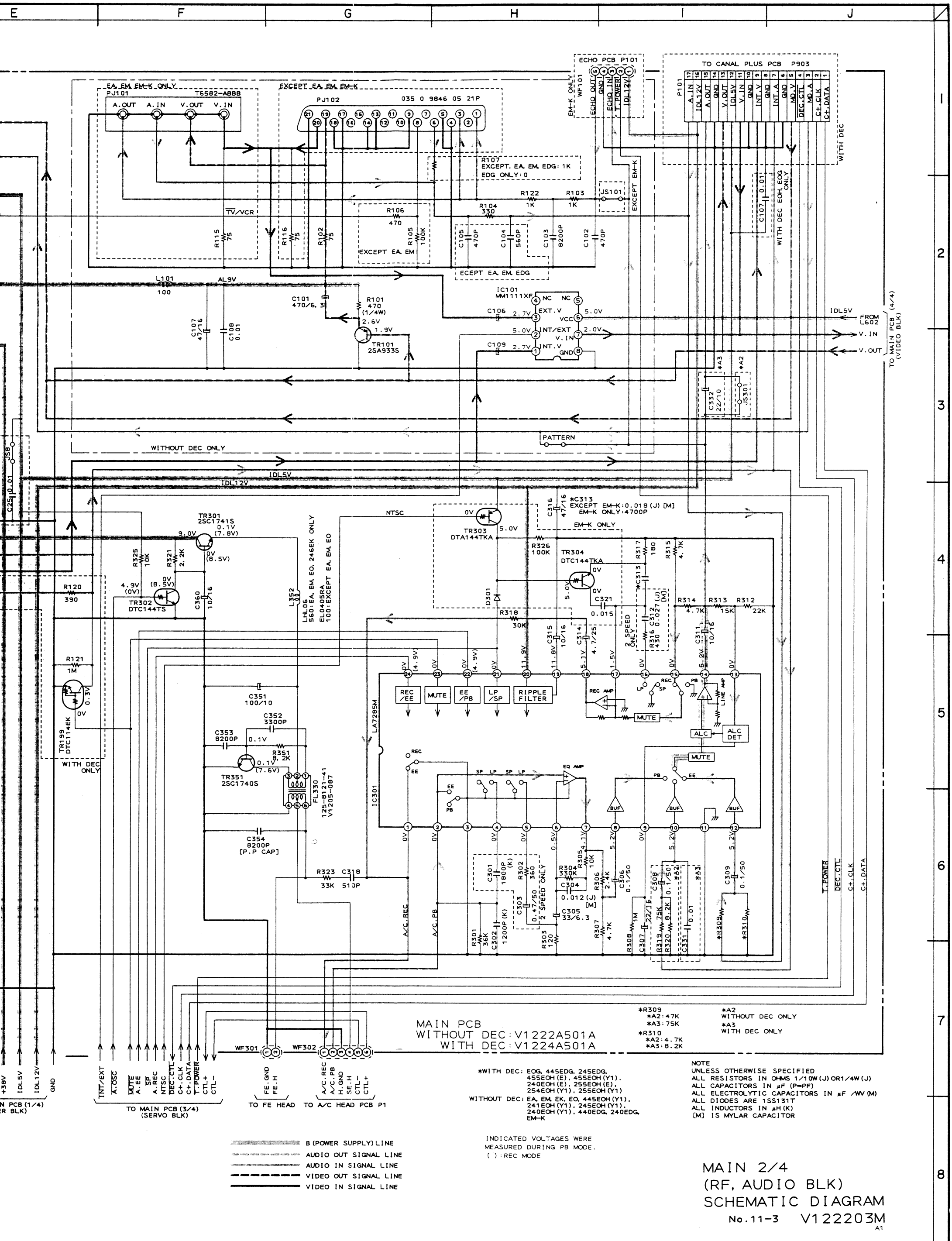
# MAIN 3/4
# (SERVO/SYSCON BLK / OPERATION/VPS BLK)
# SCHEMATIC DIAGRAM

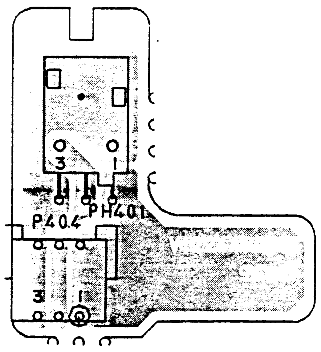
No.11-4 V122204M
A1

| | *TU1 | *MD1 | *IF1 |
|---|---|---|---|
| EA | VTSH6AZ01 | YAA21-0809G | NOR-EA |
| EK | TEKB1-014A | YAA21-1046H | NOR-EK |
| 246EK | TEKE1-147A | YAA21-1046H | NOR-ES |
| EDG | TEKE4-168A | YAA21-1001G | NOR-EDG |
| EO | TEKE1-147A | YAA21-1045H | NOR-EOG |
| EOG, EOH | TEKE4-168A | YAA21-1045H | NOR-EOG |
| EM | VTSS6CZ | YAA21-0808G | NOR-EM |
| EM-K | TEKE1-115A | YAA21-1031G | NOR-EM-K |

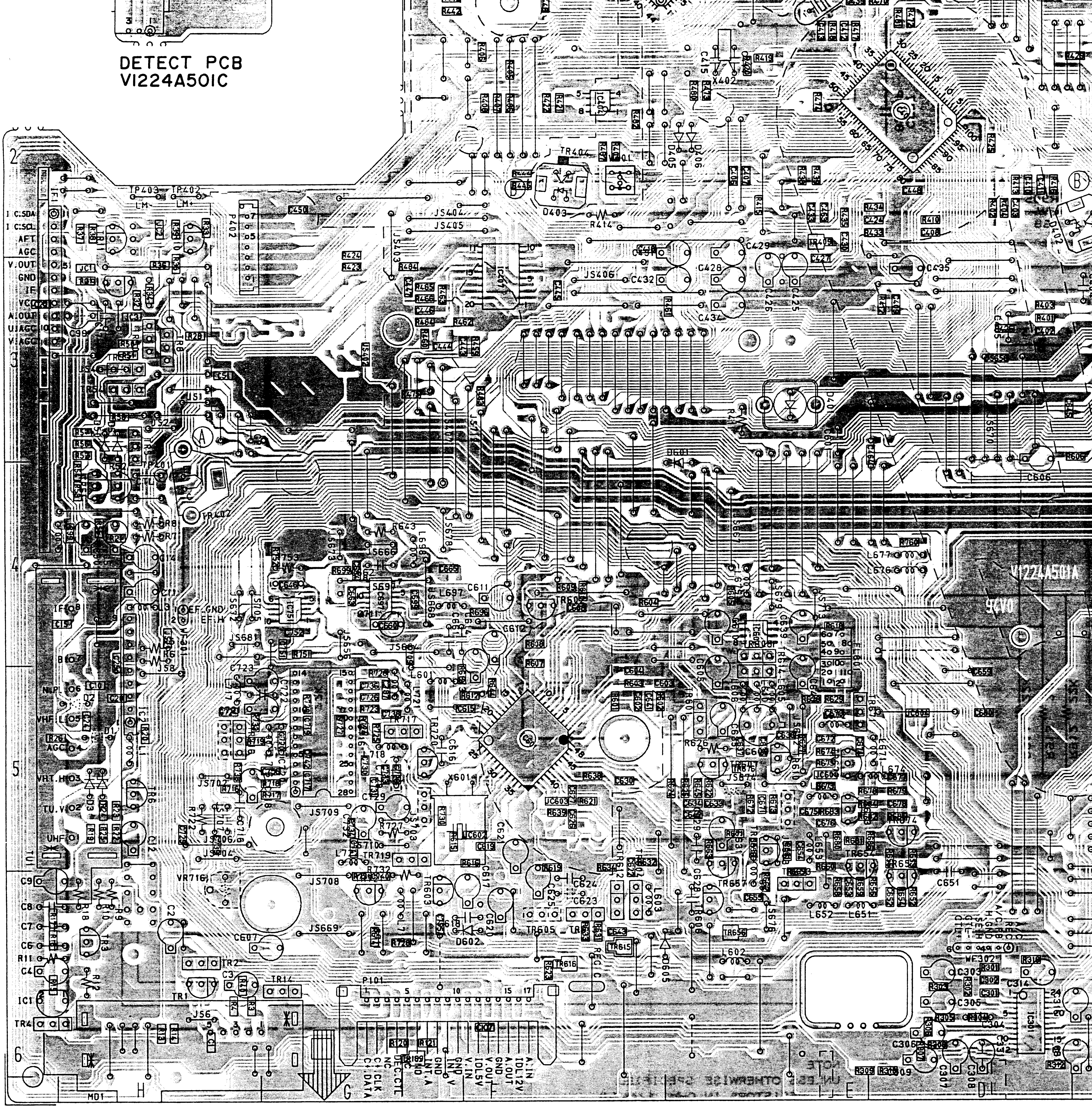
| | EDG, EOG, EOH | EA, EK, (246EK), EO, EM, EM-K |
|---|---|---|
| R12 | 22K | 22K |
| R18 | 22K | 22K |
| R20 | 240K | – |
| R21 | 330K | – |
| R23 | 10K | – |
| R24 | 390K | – |
| R25 | 1.5M | – |
| R31 | 390K | 390K |
| R32 | 330K | 330K |

| | EDG, EOG, EOH | EA | EK, EM | EO, (246EK) | EM-K |
|---|---|---|---|---|---|
| C12 | 10/16 | – | – | – | – |
| D4 | MTZJ-15C | – | – | – | – |
| L2 | – | 1.0μH | 0.68μH | – | 0.47μH |


EA, EM, EM-K ONLY
PJ101
T6582-A888
A.OUT
A.IN
V.OUT
V.IN
EXCEPT EA, EM, EM-K
PJ102
035 0 9846 05 21P
ECHO PCB P101
EM-K ONLY
WF101
ECHO OUT
GND
ECHO IN
T.POWER
IDL12V
TO CANAL PLUS PCB P903
P101
A.IN
IDL12V
A.OUT
GND
V.OUT
IDL5V
V.IN
GND
INT.V
GND
INT.A
GND
MD.V
DEC.CTL
MD.A
C+.CLK
C+.DATA
WITH DEC
R107
EXCEPT, EA, EM, EDG: 1K
EDG ONLY: 0
R122
1K
R103
1K
JS101
EXCEPT EM-K
TV/VCR
R106
470
R104
330
R115
75
R116
75
R102
75
R105
100K
EXCEPT EA, EM
C105
470P
C104
560P
C103
8200P
C102
470P
ECEPT EA, EM, EDG
C107
0.01
WITH DEC EOH, EDG ONLY
L101
100
AL9V
C101
470/6.3
R101
470
(1/4W)
2.6V
1.9V
TR101
2SA933S
C107
47/16
C108
0.01
IC101
MM1111XF
NC
NC
EXT.V
VCC
INT/EXT
V.IN
INT.V
GND
C106
2.7V
5.0V
2.0V
C109
2.7V
IDL5V
FROM L602
V.IN
V.OUT
TO MAIN PCB (4/4) (VIDEO BLK)
*A3
*A2
C332
22/10
JS301
PATTERN
WITHOUT DEC ONLY
IDL5V
IDL12V
JS8
C25
0.01
TR301
2SC1741S
0.1V
(7.8V)
9.0V
0V
(8.5V)
R325
10K
R321
2.2K
4.9V
(0V)
0V
(8.5V)
TR302
DTC144TS
C360
10/16
R120
390
L352
LHL06
560:EA, EM, EO, 246EK ONLY
EL0405RA
100:EXCEPT EA, EM, EO
NTSC
TR303
DTA144TKA
0V
5.0V
R326
100K
TR304
DTC144TKA
0V
0V
C316
47/16
*C313
EXCEPT EM-K:0.018(J) [M]
EM-K ONLY:4700P
EM-K ONLY
R317
180
R315
4.7K
*C313
D301
5.0V
C321
0.015
R318
30K
2 SPEED ONLY
R316
430
C312
0.027(J) [M]
R314
4.7K
R313
15K
R312
22K
C311
10/16
C315
10/16
C314
4.7/25
R121
1M
0.3V
0V
TR199
DTC114EK
WITH DEC ONLY
C351
100/10
C352
3300P
C353
8200P
0.1V
R351
9.2K
0.1V
(7.6V)
TR351
2SC1740S
FL330
125-8121-41
V1205-087
C354
8200P
[P.P CAP]
R323
33K
C318
510P
LA7285M
REC
/EE
MUTE
EE
/PB
LP
/SP
RIPPLE FILTER
REC AMP
REC
PB
LP
SP
LINE AMP
MUTE
ALC
ALC DET
IC301
REC
EE
SP LP SP LP
EQ AMP
EE
PB
MUTE
PB
EE
BUF
BUF
BUF
C301
1800P (K)
C302
1200P (K)
R301
36K
R302
360
C303
0.47/50
2 SPEED ONLY
R303
120
C304
0.012(J) [M]
C305
33/6.3
R305
10K
R306
2.4K
R307
4.7K
C306
0.1/50
R308
1M
C307
22/16
C308
0.1/50
R319
75K
R320
8.2K
C331
0.01
*R308
*R310
C309
0.1/50
T.POWER
DEC.CTL
C+.CLK
C+.DATA
A/C.REC
A/C.PB
WF301
WF302
TNT/EXT
A.OSC
MUTE
A.EE
SP
A.REC
NTSC
DEC.CTL
C+.CLK
C+.DATA
T.POWER
CTL+
CTL-
FE.GND
FE.H
A/C.REC
A/C.PB
H.GND
SE.H
CTL-
CTL+
TO MAIN PCB (3/4) (SERVO BLK)
TO FE HEAD
TO A/C HEAD PCB P1
*R309
*A2: 47K
*A3: 75K
*R310
*A2: 4.7K
*A3: 8.2K
*A2
WITHOUT DEC ONLY
*A3
WITH DEC ONLY
MAIN PCB
WITHOUT DEC: V1222A501A
WITH DEC: V1224A501A
*WITH DEC: EOG, 445EDG, 245EDG, 455EOH(E), 455EOH(Y1), 240EOH(E), 255EOH(E), 254EOH(Y1), 255EOH(Y1)
WITHOUT DEC: EA, EM, EK, EO, 445EOH(Y1), 241EOH(Y1), 245EOH(Y1), 240EOH(Y1), 440EDG, 240EDG, EM-K
NOTE
UNLESS OTHERWISE SPECIFIED
ALL RESISTORS IN OHMS 1/10W(J) OR 1/4W(J)
ALL CAPACITORS IN µF (P=PF)
ALL ELECTROLYTIC CAPACITORS IN µF /WV (M)
ALL DIODES ARE 1SS131T
ALL INDUCTORS IN µH (K)
[M] IS MYLAR CAPACITOR
B (POWER SUPPLY) LINE
AUDIO OUT SIGNAL LINE
AUDIO IN SIGNAL LINE
VIDEO OUT SIGNAL LINE
VIDEO IN SIGNAL LINE
INDICATED VOLTAGES WERE MEASURED DURING PB MODE.
( ): REC MODE
MAIN 2/4
(RF, AUDIO BLK)
SCHEMATIC DIAGRAM
No.11-3 V122203M
A1



DETECT PCB
VI224A501C




MAIN PCB VI224A501A

WARNING: ⚠INDICATES
REPLACE SAF
RECOMMEND

AVERTISSEMENT: ⚠IL IN
POUR MAINTE
NE REMPLAC

NOTE : PARTS
REFER
PARTS

## PRINCIPAL PARTS LOCATION

**ICs**

| | |
|---|---|
| IC1 | H6 |
| IC2 | H4,5 |
| IC201 | B3 |
| IC301 | D6 |
| IC401 | D2 |
| IC402 | C3 |
| IC403 | C1,2 |
| IC404 | F2 |
| IC405 | E,F1 |
| IC406 | C1 |
| IC407 | F3 |
| IC601 | F5 |
| IC602 | E4 |
| IC697 | G4 |
| IC716 | G5 |
| IC751 | G4 |

**TRANSISTORs**

| | |
|---|---|
| TR1 | H6 |
| TR2 | H6 |
| TR3 | H6 |
| TR4 | H6 |
| TR5 | H3 |
| TR6 | H5 |
| TR8 | H3 |
| TR9 | H3 |
| TR10 | H2 |
| TR11 | H2 |
| TR14 | G6 |
| TR50 | H3 |
| TR51 | H4 |
| TR52 | H4 |
| TR53 | H3 |
| TR54 | H3 |
| TR201 | A4 |
| TR202 | A5 |
| TR203 | B2 |
| TR204 | B2 |
| TR205 | C2 |
| TR207 | A2 |
| TR208 | A2 |
| TR210 | B2 |
| TR211 | B2 |
| TR212 | B3 |
| TR213 | B2 |
| TR214 | B3 |
| TR215 | B2 |
| TR216 | B2 |
| TR217 | A5 |
| TR301 | B5 |
| TR302 | B,C5 |
| TR303 | C5 |
| TR304 | C6 |
| TR351 | B6 |
| TR405 | C3 |
| TR406 | C2 |
| TR409 | E2 |
| TR601 | E5 |
| TR602 | F4 |
| TR603 | G6 |
| TR604 | F6 |
| TR605 | F6 |
| TR606 | E6 |
| TR607 | E5 |
| TR608 | E4 |
| TR610 | E5 |
| TR612 | F6 |
| TR613 | F6 |
| TR614 | E5 |
| TR615 | F6 |
| TR616 | F6 |
| TR652 | D6 |
| TR653 | E6 |
| TR654 | E5,6 |
| TR655 | E5 |
| TR656 | E6 |
| TR657 | E5,6 |
| TR671 | E5 |
| TR672 | E5 |
| TR673 | E5 |
| TR674 | D5 |
| TR676 | E5 |
| TR716 | H5 |
| TR717 | G5 |
| TR719 | G5 |
| TR720 | G5 |
| TR721 | G6 |

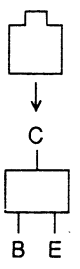
**CONNECTORs**

| | |
|---|---|
| P101 | F,G6 |
| P201 | A,B6 |
| P401 | B4 |
| P402 | G2,3 |
| P403 | G1 |
| P601 | C6 |

**WIREs**

| | |
|---|---|
| WF301 | H4 |
| WF302 | D6 |

SINGLE CHIP TRANSISTOR




501A

WARNING: ⚠ INDICATES SAFETY CRITICAL COMPONENTS FOR CONTINUED SAFETY, REPLACE SAFETY CRITICAL COMPONENTS ONLY WITH MANUFACTURER'S RECOMMENDED PARTS

AVERTISSEMENT: ⚠ IL INDIQUE LES COMPOSANTS CRITIQUES DE SÉCURITÉ. POUR MAINTENIR LE DEGRÉ DE SÉCURITÉ DE L'APPAREIL, NE REMPLACER QUE DES PIÈCES RECOMMANDEES PAR LE FABRICANT

NOTE : PARTS DIFFER DEPENDING ON MODEL NUMBER. REFER TO SCHEMATIC DIAGRAMS FOR PERTINENT PARTS INFORMATION.

CAUTION:
As the primary side of the MAIN PCB's power section (white colored part) contains high voltage, there is risk of electric shock. be sure to use extreme caution.

TO DECODER

P902 (BLUE)

R901 680

R902 3K

R903 3K

C901 100P

C902 6800P

C903 680P

C904 100P

C905 100P

R904 75

R906 680

C906 100P

R940 100K

C907

R905 68

C918 1/50

IC901 BA7631F

C919 47/6.3

C920 0.01

C912 0.01

C913 47/16

C914 1/50

C917 1/50

C916 1/50

C915 1/50

L901 100

L902 100

L903 100

R911 10K

R912 22K

R913 22K

R914 22K

C927 0.01

C926 47/16

5.1V

0V

TR901
DTC144ES
(47K–47K)

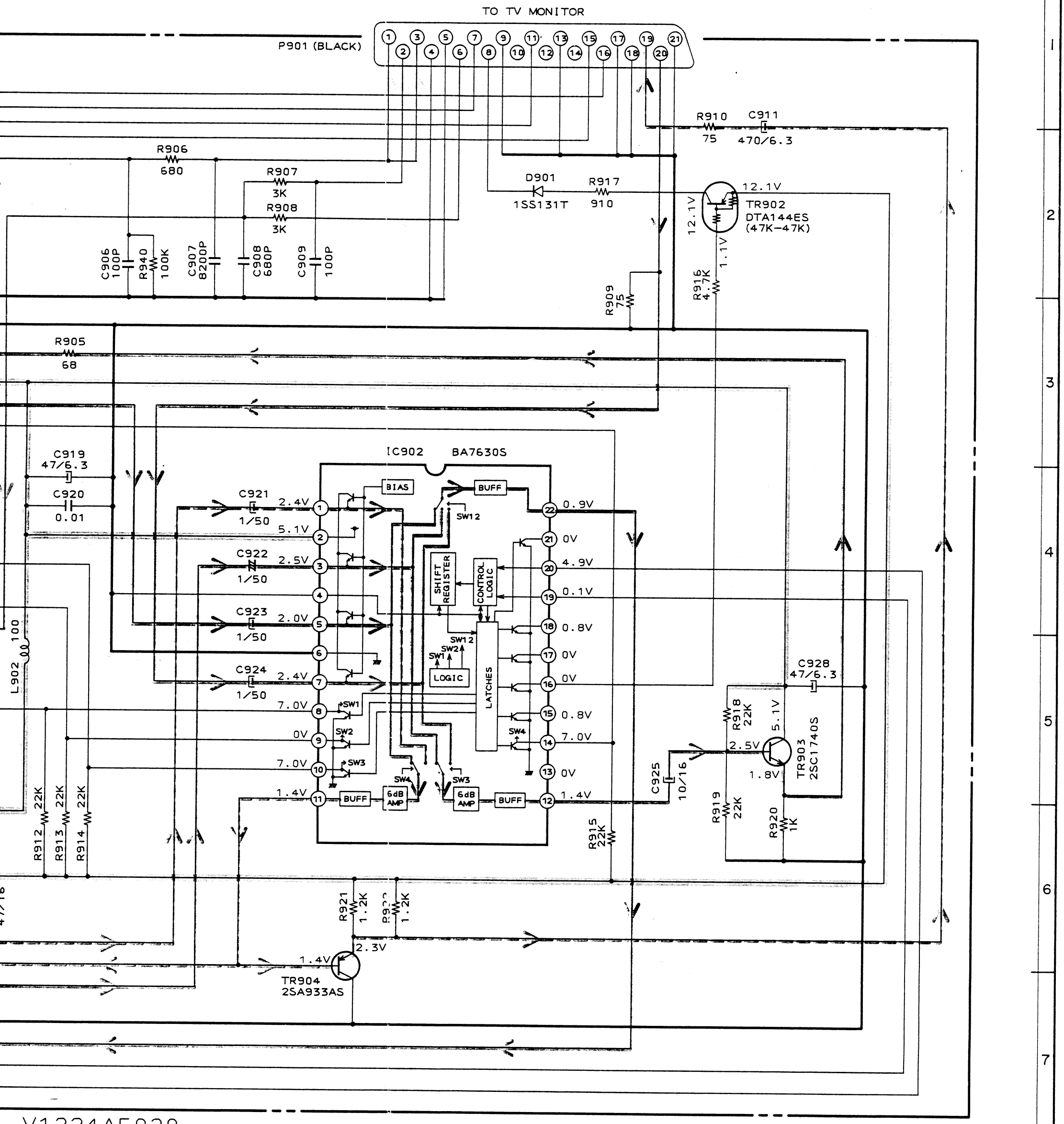
P903

| 17 | 16 | 15 | 14 | 13 | 12 | 11 | 10 | 9 | 8 | 7 | 6 | 5 | 4 | 3 | 2 | 1 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| A.IN | IDL12V | A.OUT | GND | V.OUT | IDL5V | V.IN | GND | INT.V | GND | INT.A | GND | MOD.V | DECCTL | MOD.A | C+.CLK | C+.DATA |

TO MAIN (2/4) PCB P101
(RF/AUDIO BLK)

# CANAL PLUS PCB V1224A5020

: B (POWER SUPPLY) LINE
: PB AUDIO SIGNAL LINE
: REC/EE AUDIO SIGNAL LINE
: PB VIDEO SIGNAL LINE
: REC/EE VIDEO SIGNAL LINE



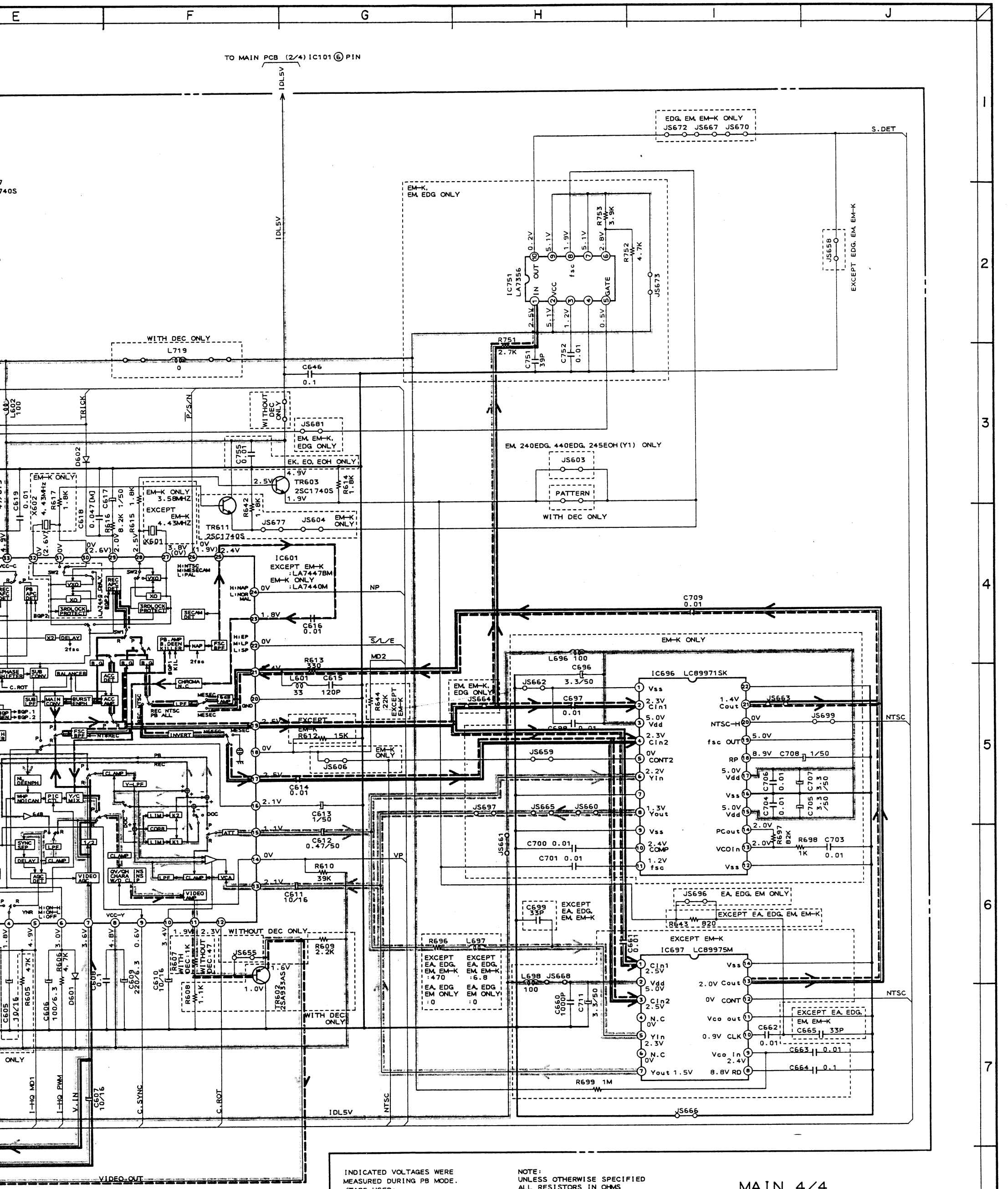

V1224A5020

: B (POWER SUPPLY) LINE
: PB AUDIO SIGNAL LINE
: REC/EE AUDIO SIGNAL LINE
: PB VIDEO SIGNAL LINE
: REC/EE VIDEO SIGNAL LINE

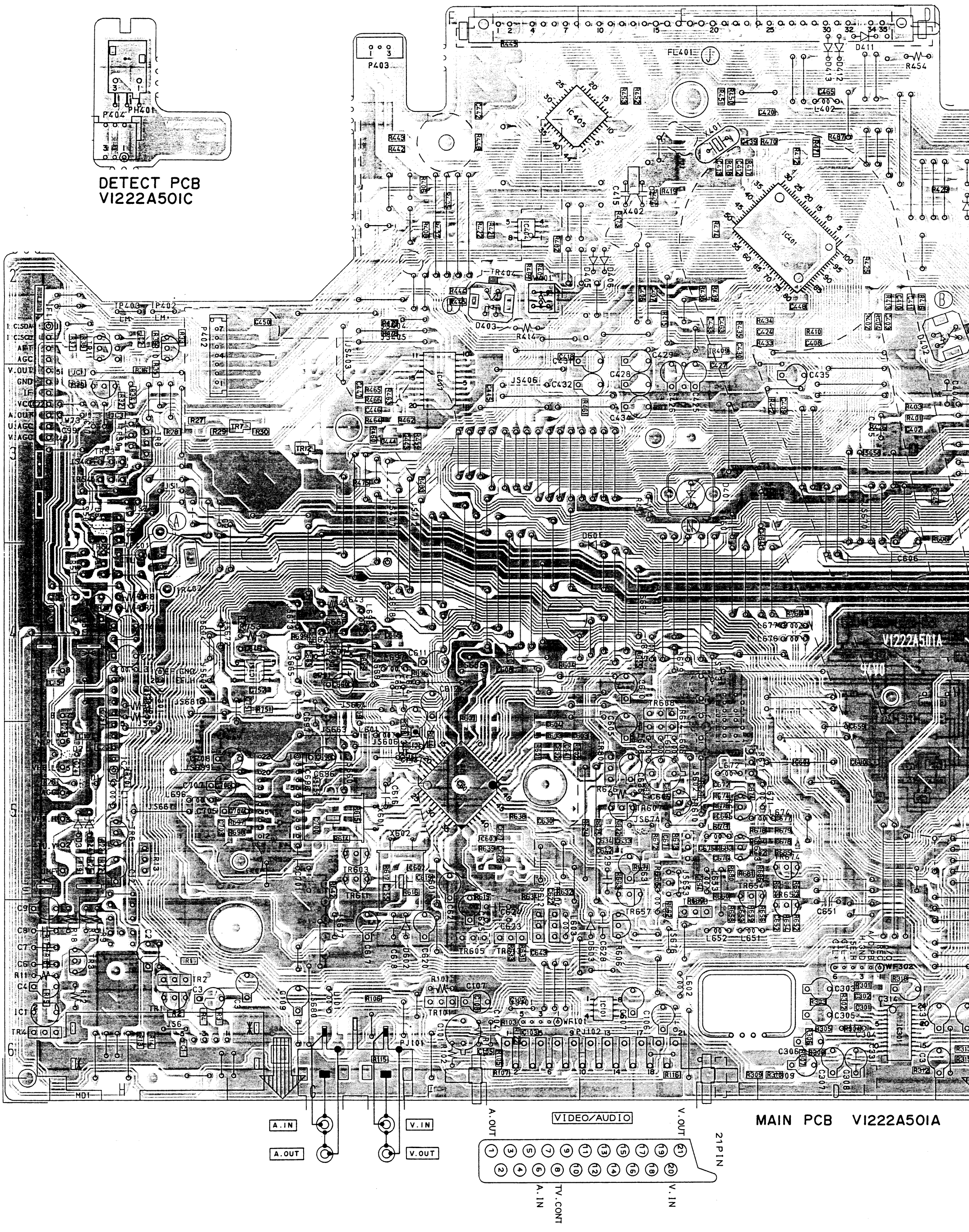
NOTE
UNLESS OTHERWISE SPECIFIED
ALL RESISTORS IN OHMS 1/4W (J)
ALL CAPACITORS IN μF (P=PF)
ALL ELECTROLYTIC CAPACITORS IN μF/WV (M)
ALL INDUCTORS IN μH (J)
INDICATED VOLTAGES WERE MEASURED DURING E-E (STOP) MODE.

CANAL PLUS
SCHEMATIC DIAGRAM
No.11-6 V122211M
A2

P601
TO PRE AMP PCB P85I
G2
G4
HEAD CTL
COMP OUT
TRICK
SP
IDL5V
REC SG
PB ENVE
REC.S
V.GND
V.SWP
ENV DET
C.SYNC
DM12V
DM FG
DM CONT
DM PG
M.GND
I-HQ MD2
G4 ONLY
L677
C659 0.01
R652 22K
R654 1K
TR653 DTA144ES
R658 3.9K
C653 G2:12P G4:10P
L652 47
R669
G4:5.6K
G2-EK, EM:4.7K
G2-EXCEPT EK, EM:6.8K
R659 G4:270 G2:150
JS653
R662 0
TR657 2SC1740S
TR654 2SC1740S
TR652 2SC1740S
C651 0.01
L651 39
C652 33P
R656 820
R660 820
L654 220
C656 300P
R663 3.3K
R653 22K
R655 1K
C654 43P
L653 10
R680 1K
L676 4.7
R641 100K
C644 51P
C601 0.01
C680 0.01
L675 100
WITH DEC ONLY
L719 0
IDL5V
TR674 2SC1740S
TR613 2SC1740S
TR612 DTA114ES
TR604 DTC144ES
TR606 2SC1740S
TR672 2SC1740S
TR673 2SC1740S
R686 2.2K
R682 1.5K
R683 1K
R684 6.8K
R681 22K
R680 22K
R679 150
C677 91P
L674 5.6
C676 0.01
R677 1.8K
C675 120P
L673 330
R678 470
R674 3K
R675 1K
C674 0.01
C678 0.01
R685 2.2K
C624 0.022 [M]
C625 1/50
R619 1K
R639 0
C627 0.047
C628
G2-EK, EM, EM-K & G4:0.047 [M]
EXCEPT:0.033 [M]
C629 0.01
D603
G2-EK, EM, EM-K ONLY
R672 1K
R671 1K
C672 150P
L672 220
L671 68
C671 120P
R673 510
C643 0.01
R631 39K
R633 1K
R632 12K
R634 G2-EK, EM G4:560 EXCEPT: 820
C626 0.01
JS680
JS601
L602 100
D602
C621 1/50
L603 68
C622 180P
C620 47/6.3
C619 0.01
X602 4.43MHz
R617 1.8K
C618 0.047 [M]
C617
R616 8.2K 1/50
R615 1.8K
EM-K ONLY 3.58MHZ
EXCEPT EM-K 4.43MHZ
K601
C645 330P
C685 0.01
WITH DEC-EOH, EOG ONLY
TO MAIN PCB 3/4 (SERVO/SYSCON BLK)
DM12V
DM FG
DM.CONT
DM PG
M.GND
S/L/E
C.KILL
COMP OUT
HEAD CTL
I-HQ MD2
I-HQ MD1
P/S/N
I-HQ PWM
SP
C.SYNC
VP
NP
C.ROT
EE
TRICK
ENV DET
V.SWP
REC.S
S.DET
SEC/MES
NTSC
3.58REC
EE
TO MAIN PCB 3/4 (SERVO/SYS BLK)
TO MAIN PCB 1/4 (POWER BLK)
IDL5V
V.GND
TO MAIN PCB 3/4 (SERVO/SYS BLK) TO VPS PDC
V.IN
TO MAIN PCB 2/4 (I/O BLK)
VIDEO IN
VIDEO OUT
SEC. MES
EXCEPT EA, EK
TR608 DTA144ES
L605 33
C636 47P
L606 47
C637 27P
TR610 2SC1740S
WITH DEC
R628 0Ω
PATTERN
WITHOUT DEC
R627 1K
JS602
R622 1.5K
C633 27P
C642 18P
C634 200P
JS674
TR607 2SC1740S
R625 2.2K
R626 470
C648 51P
L610 39
TR614 DTC144ES
JS679
JS678
JS712
EM-K ONLY
3.58R
EE
C630 0.01
C631 10/16
R638 100
R624 4.7K (F)
C635 1/50
R601 2.7K
TR601 DTA114ES
C641 27P
C602 360P
R602 750
C603 5P
R603 1K
C604 0.01
R604 33K
C605 10/16
R605 47K
C606 100/6.3
R606 4.7K
D601
C608 0.1
C609 220/6.3
C610 10/16
R607 (WITH DEC:1K WITHOUT DEC:47)
R608 1.1K
G4, G2-EK, EM, EM-K ONLY
I-HQ MD1
I-HQ PWM
V.IN
C.SYNC
VIDEO OUT
SW1
SW2
VXO
XO
3RDLOCK PROTECT
REC APC DET
PB APC DET
321FH VCO
LPF
PHASE SHIFTER
SUB CONV
BALANCER
ACC DET
C-LPF
SUB LPF
MAIN CONV
BURST ENPH
ACC AMP
BGP GEN
BGP.1
BGP.2
HALF KILLER
FM AGC
DOUBLE LIMIT
FM DEMOD
FM MOD
CARR SHIFT
DOC DET
REQ 4.2V
SUB LPF
MAIN DEENPH
SYNC SEP
DELAY
FMAGC DET
AGC DET
W/D CLIP
DETAIL ENH
MAIN ENPH
NL ENPH
VIDEO AMP
Y-LPF
WHP NOICAN
PIC CTL
Y/C MIX
CORR
LIM
K1
K2
CHROMA N.C
REC NTSC PB ALL
SECAM DET
NAP
PB.AMP KILLER
INVERT
FSC BPF
NTSREC
VCC-C
VCC-Y
N.C
H:NTSC M:MESECAM L:PAL
MAIN PCB V1222A501A/V1224A501A
B (POWER SUPPLY) LINE
PB Y SIGNAL LINE
REC Y SIGNAL LINE
PB CHROMA SIGNAL LINE
REC CHROMA SIGNAL LINE
* 2 HEAD MODELS ARE ABBREVIATED TO "G2" AND 4 HEAD MODELS ARE "G4" IN THIS DIAGRAM.


TO MAIN PCB (2/4) IC101 ⑥ PIN
IDL5V
EDG, EM, EM-K ONLY
JS672 JS667 JS670
S.DET
EM-K, EM, EDG ONLY
IC751 LA7356
IN OUT VCC fsc GATE
JS673
JS658
EXCEPT EDG, EM, EM-K
WITH DEC ONLY
L719
C646 0.1
R751 2.7K
C751 39P
C752 0.01
EM, 240EDG, 440EDG, 245EOH(Y1) ONLY
JS603
PATTERN
WITH DEC ONLY
JS681
EM, EM-K, EDG ONLY
EK, EO, EOH ONLY
TR603 2SC1740S
EM-K ONLY
3.58MHZ
EXCEPT EM-K 4.43MHZ
X602 4.43MHz
X601
TR611 2SC1740S
JS677 JS604 EM-K ONLY
IC601
EXCEPT EM-K :LA7447BM
EM-K ONLY :LA7440M
NP
S/L/E
MD2
C616 0.01
R613 330
L601 33
C615 120P
R644 22K EXCEPT EM-K
R612 15K EXCEPT EM-K
JS606 EM-K ONLY
C614 0.01
C613 1/50
C612 0.47/50
R610 39K
C611 10/16
VP
R609 2.2K
WITHOUT DEC ONLY
JS655
TR602 2SA933AS
WITH DEC ONLY
R696 L697
EXCEPT EA, EDG, EM, EM-K :470 :6.8
EA, EDG EM ONLY :0 :0
C709 0.01
EM-K ONLY
L696 100
C696
IC696 LC89971SK
JS662 3.3/50
C697 0.01
JS664
JS659
JS697 JS665 JS660
JS661
C700 0.01
C701 0.01
JS663
JS699
NTSC
C706 0.01
C707 3.3/50
C704 0.01
C705 3.3/50
R697 82K
R698 1K
C703 0.01
JS696 EA, EDG, EM ONLY
EXCEPT EA, EDG, EM, EM-K
R643 820
C699 33P EXCEPT EA, EDG, EM, EM-K
EXCEPT EM-K
IC697 LC89975M
L698 JS668 100
C660 1000P
C711 3.3/50
C661 0.01
C662 0.01
C665 33P
C663 0.01
C664 0.1
R699 1M
JS666
EXCEPT EA, EDG, EM, EM-K
C605 10/16
R605 4.7K
C606 100/6.3
R606 4.7K
D601
C608 0.1
C609 220/6.3
C610 10/16
R607 WITH DEC:1K WITHOUT DEC:47
R608 1.1K
C607 10/16
I-HQ MD1
I-HQ PWM
V.IN
C.SYNC
C.ROT
IDL5V
NTSC
VIDEO OUT
TRLCK
P/S/N
D602
L602 100
C619 0.01
R617 1.8K
C618 0.047 [M]
C617
R616
R615 8.2K 1/50
R614 1.8K
R642 1.8K
C755 0.01
R753 3.9K
R752 4.7K
C752 0.01
C751 39P
R751 2.7K
C646 0.1
L719 0
L602 100
C709 0.01
C696
C697 0.01
C698 0.01
C706 0.01
C707 3.3/50
C704 0.01
C705 3.3/50
C699 33P
C661 0.01
C660 1000P
C711 3.3/50
C662 0.01
C665 33P
C663 0.01
C664 0.1
R697 82K
R698 1K
C703 0.01
R643 820
R696
R699 1M
L697
L698 100
JS659
JS697 JS665 JS660
JS661
JS663
JS699
JS696
JS666
JS658
JS673
JS603
JS681
JS677 JS604
JS655
JS606
JS664
JS662
JS659
JS668
JS669
JS670
JS672
JS667
JS658
JS673
JS603
JS681
JS677

DETECT PCB
V1222A501C



V1222A501A
IC401
IC403
IC406
IC201
TR212
TR211
TR213
TR214
TR215
TR216
TR201
TR202
TR203
TR204
TR205
TR207
TR208
TR210
TR217
TR301
TR302
TR351
TR401
TR402
TR403
TR404
TR405
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TR601
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TR610
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TR613
TR614
TR652
TR653
TR654
TR656
TR657
TR672
TR673
TR674
TR676
P201
P401
P402
P403
P601
WF101
WF301
WF302
JS201
JS202
JS203
JS204
JS205
JS206
JS207
JS208
JS209
JS210
JS211
JS214
SW401
SW402
SW403
SW404
SW405
SW406
SW407
SW408
SW409
REC
CHANNEL
RESET
POWER
PLAY
FF
RWD
STOP/EJECT
PH201
FR401
FR201
FR202
FR203
FR204
D201
D202
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L352
L401
L651
L671
L672
L673
L674
L675
L676
L677
FL390
C201
C202
C203
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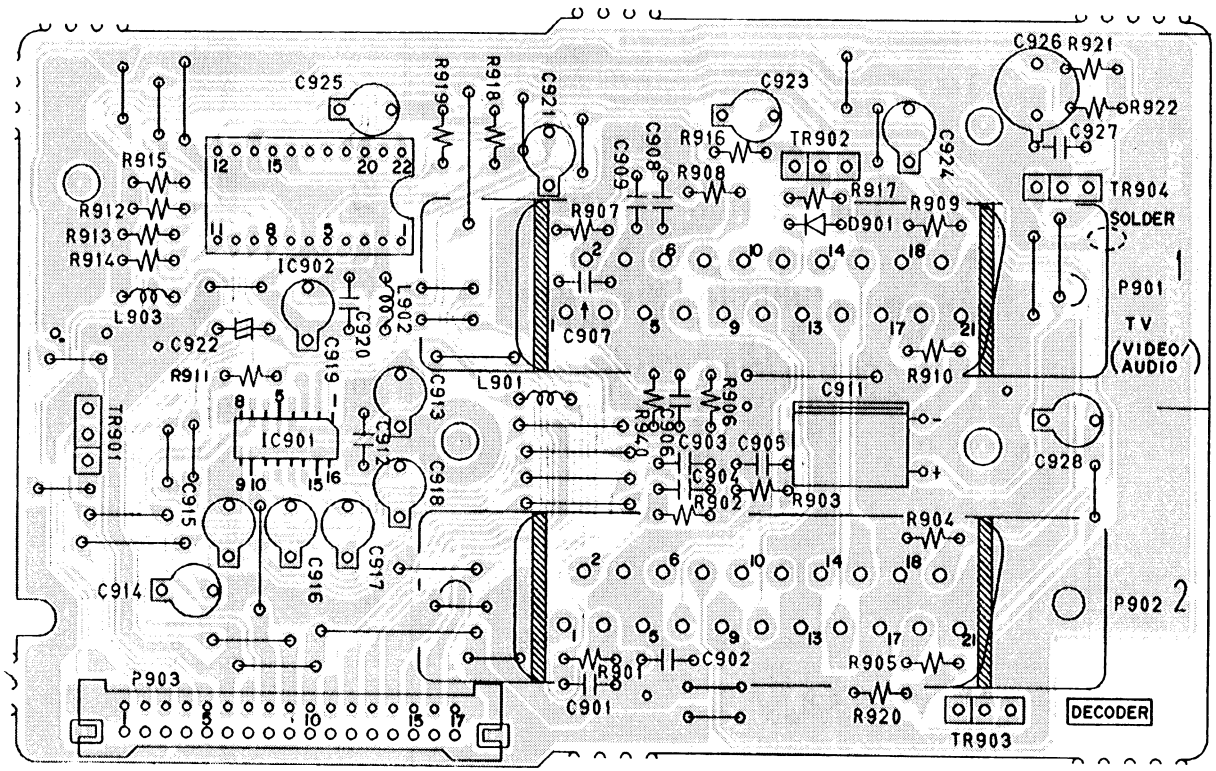
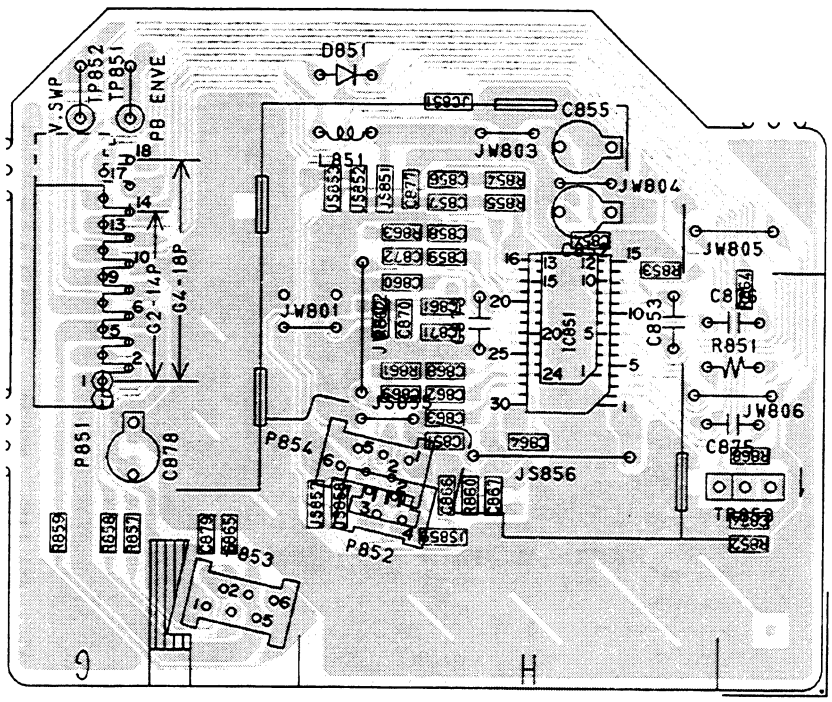
C340

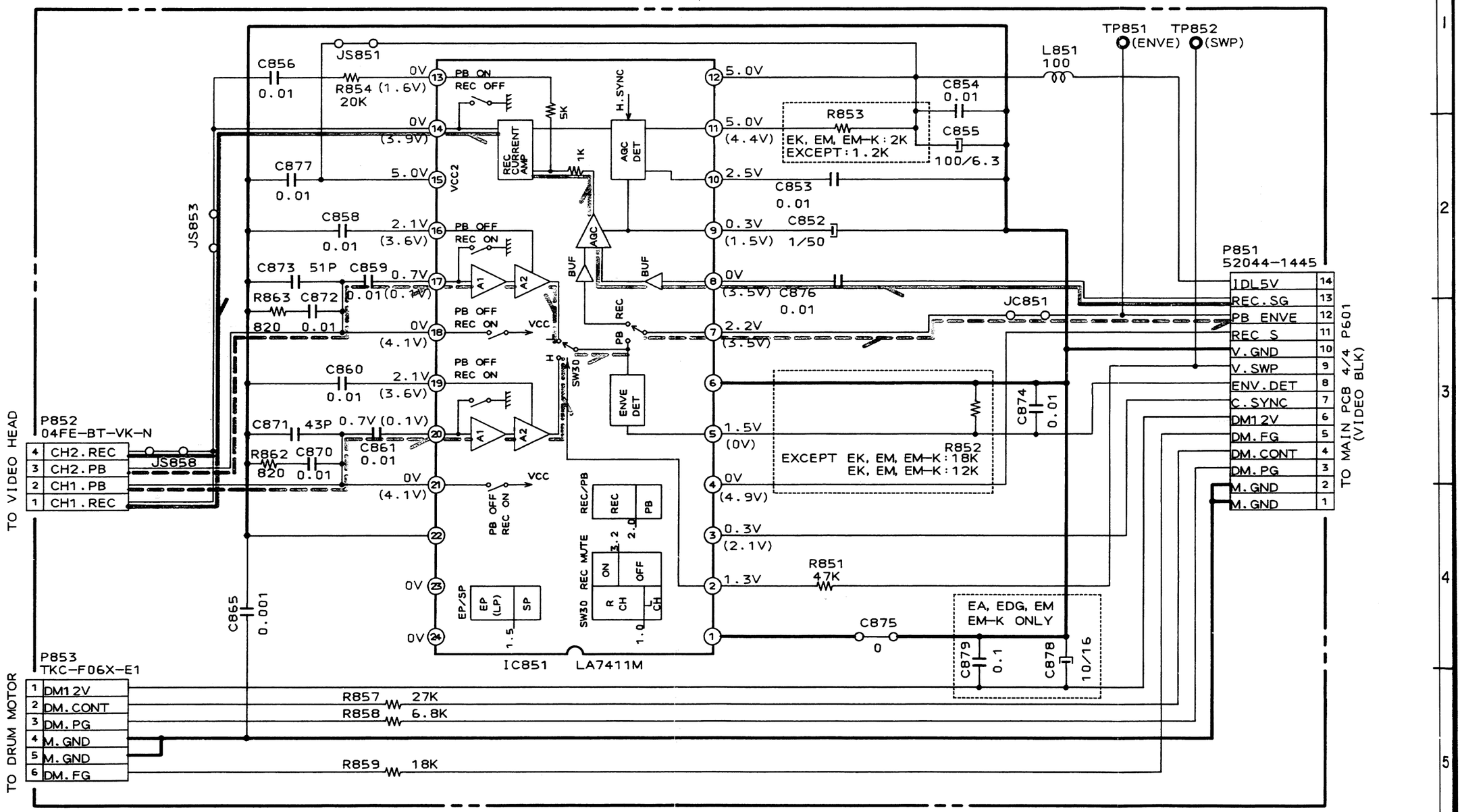



CANAL PLUS PCB V1224A5020




PRE AMP PCB V1222A501B

NOTE : PARTS DIFFER DEPENDING ON MODEL NUMBER. REFER TO SCHEMATIC DIAGRAMS FOR PERTINENT PARTS INFORMATION.




PRE AMP PCB V1222A501B/V12224A501B

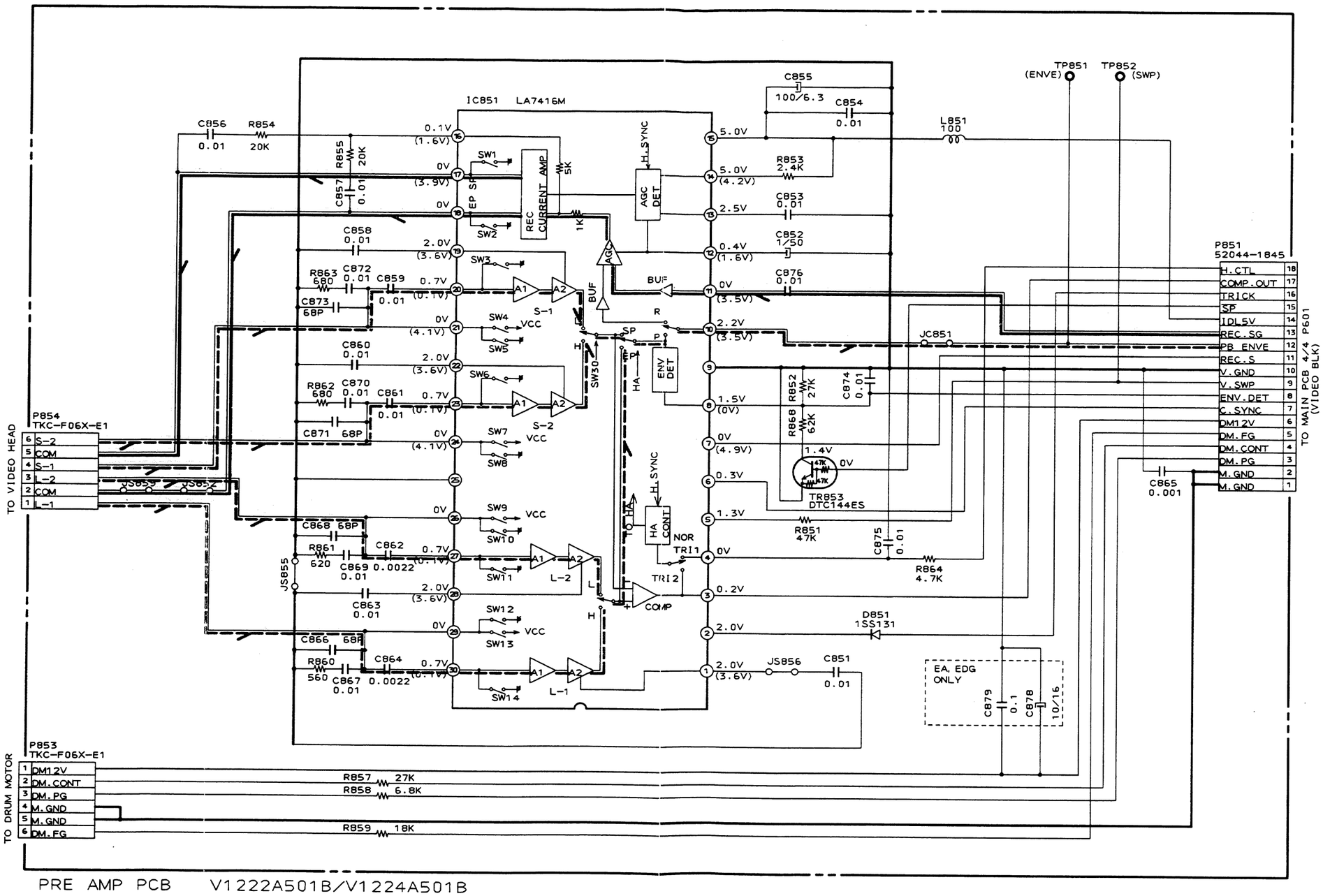
B (POWER SUPPLY) LINE
PB Y SIGNAL LINE
REC Y SIGNAL LINE
PB CHROMA SIGNAL LINE
REC CHROMA SIGNAL LINE

INDICATED VOLTAGES WERE MEASURED DURING PB MODE.
( ) : REC MODE

NOTE:
UNLESS OTHERWISE SPECIFIED
ALL RESISTORS IN OHMS
ALL CAPACITORS IN μF (P=PF)
ALL ELECTROLYTIC CAPACITORS IN μF/WV

# PRE AMP (2 HEAD) SCHEMATIC DIAGRAM

No.11-7 V122206M
A3




PRE AMP PCB V1222A501B/V1224A501B

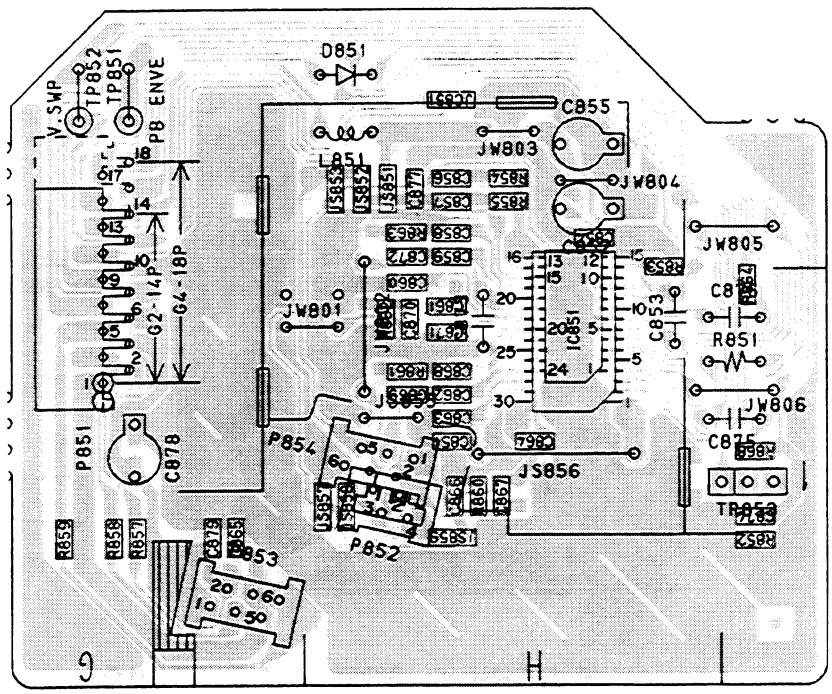
B (POWER SUPPLY) LINE
PB Y SIGNAL LINE
REC Y SIGNAL LINE
PB CHROMA SIGNAL LINE
REC CHROMA SIGNAL LINE

INDICATED VOLTAGES WERE MEASURED DURING PB MODE.
( ) : REC MODE

NOTE:
UNLESS OTHERWISE SPECIFIED
ALL RESISTORS IN OHMS
ALL CAPACITORS IN μF (P=PF)
ALL ELECTROLYTIC CAPACITORS IN μF/WV

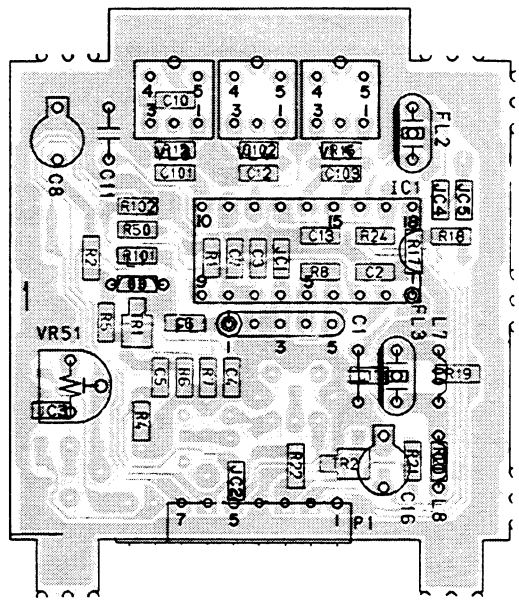
# PRE AMP (4 HEAD) SCHEMATIC DIAGRAM

No.11-8 V122207M
A2



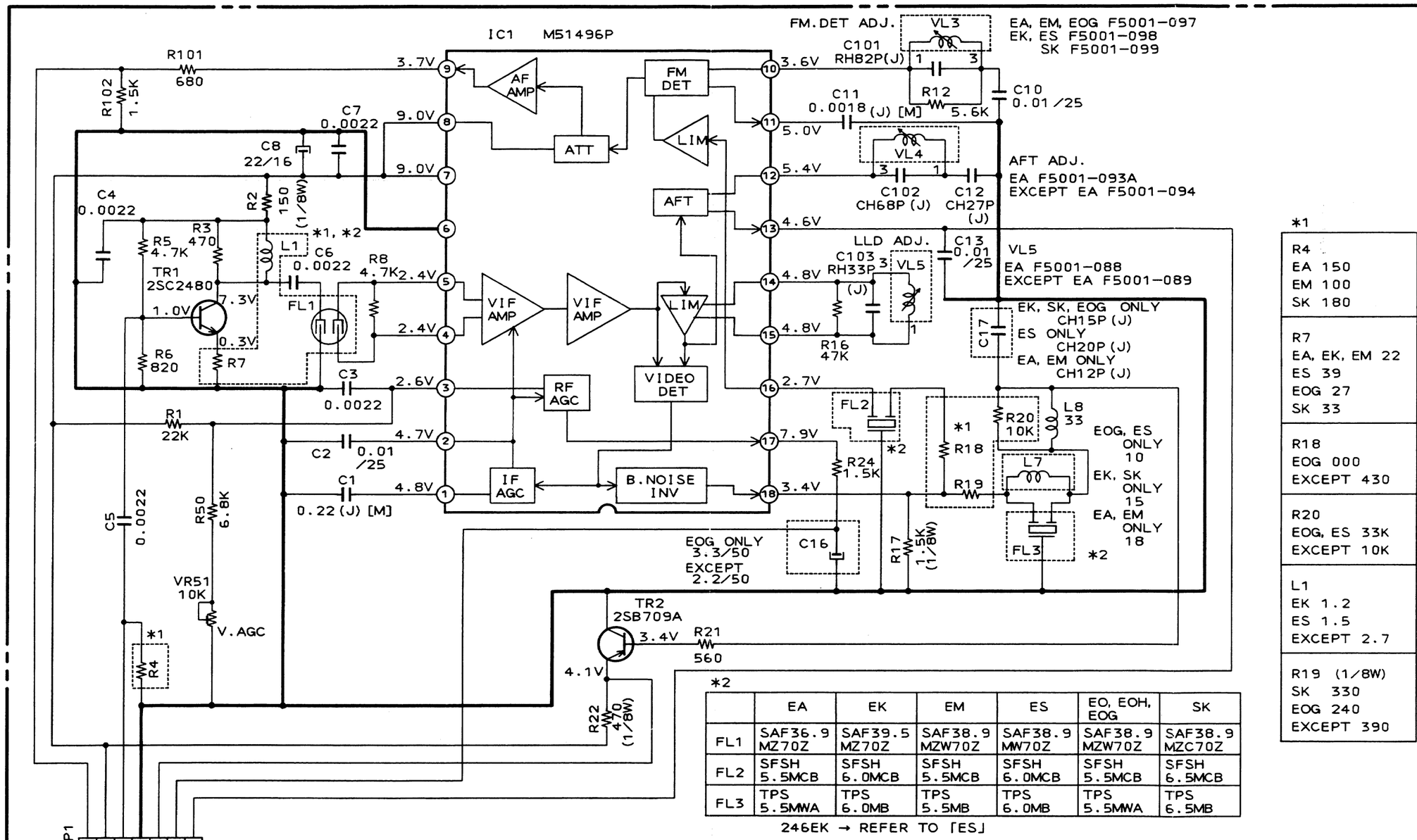

PRE AMP PCB V1224A501B

NOTE : PARTS DIFFER DEPENDING ON MODEL NUMBER. REFER TO SCHEMATIC DIAGRAMS FOR PERTINENT PARTS INFORMATION.




## VIF-NORMAL PCB F5001A5040

NOTE : PARTS DIFFER DEPENDING ON MODEL NUMBER. REFER TO SCHEMATIC DIAGRAMS FOR PERTINENT PARTS INFORMATION.




*1

| | |
|---|---|
| R4 | |
| EA | 150 |
| EM | 100 |
| SK | 180 |
| R7 | |
| EA, EK, EM | 22 |
| ES | 39 |
| EOG | 27 |
| SK | 33 |
| R18 | |
| EOG | 000 |
| EXCEPT | 430 |
| R20 | |
| EOG, ES | 33K |
| EXCEPT | 10K |
| L1 | |
| EK | 1.2 |
| ES | 1.5 |
| EXCEPT | 2.7 |
| R19 (1/8W) | |
| SK | 330 |
| EOG | 240 |
| EXCEPT | 390 |

*2

| | EA | EK | EM | ES | EO, EOH, EOG | SK |
|---|---|---|---|---|---|---|
| FL1 | SAF36.9 MZ70Z | SAF39.5 MZ70Z | SAF38.9 MZW70Z | SAF38.9 MW70Z | SAF38.9 MZW70Z | SAF38.9 MZC70Z |
| FL2 | SFSH 5.5MCB | SFSH 6.0MCB | SFSH 5.5MCB | SFSH 6.0MCB | SFSH 5.5MCB | SFSH 6.5MCB |
| FL3 | TPS 5.5MWA | TPS 6.0MB | TPS 5.5MB | TPS 6.0MB | TPS 5.5MWA | TPS 6.5MB |

246EK → REFER TO 「ES」

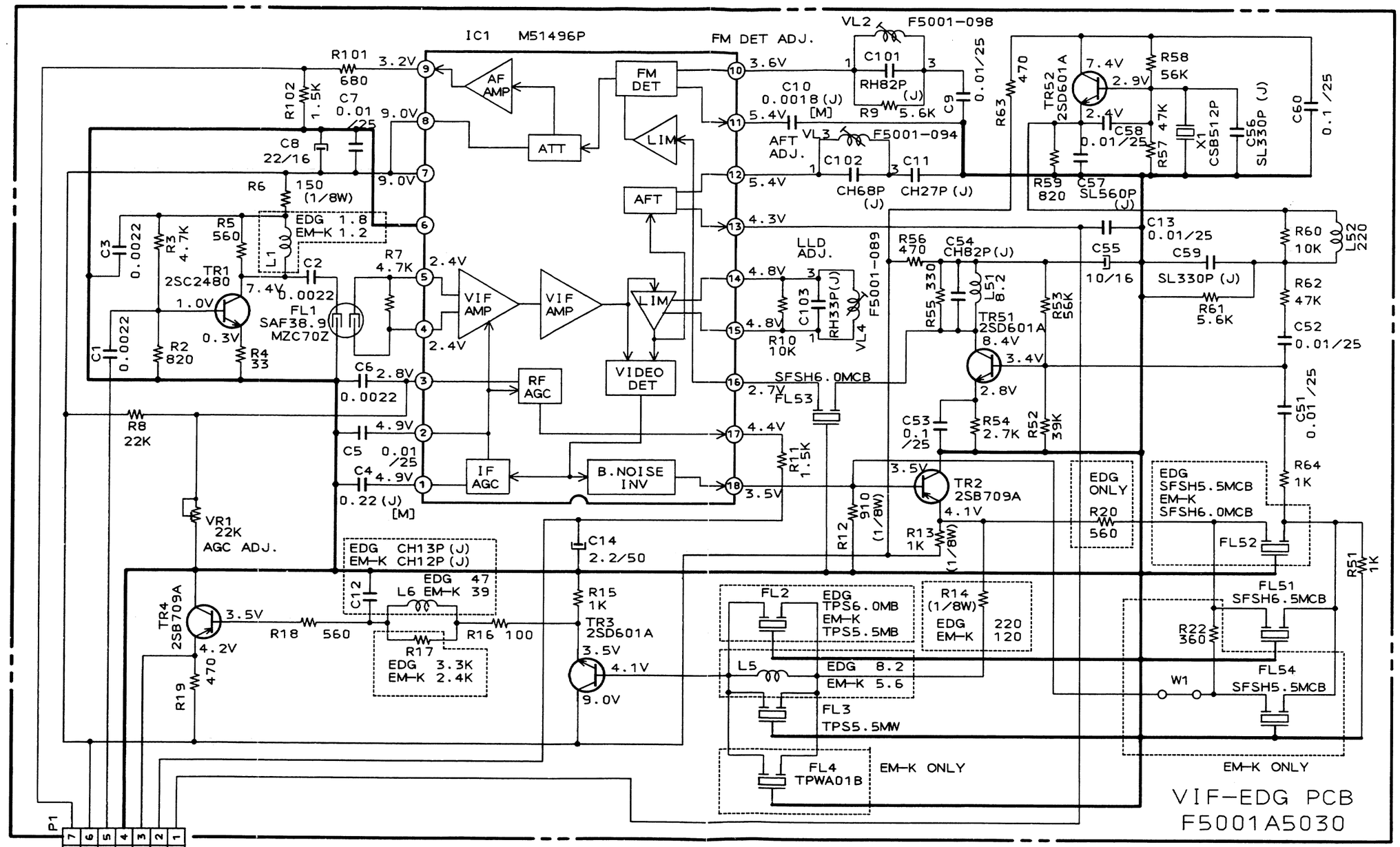
# VIF-NORMAL PCB. F5001A5040

B (POWER SUPPLY) LINE

INDICATED VOLTAGES WERE MEASURED DURING E-E (STOP) MODE.
(WHEN A STATION WAS BEING RECEIVED)

NOTE
UNLESS OTHERWISE SPECIFIED
ALL RESISTORS IN OHMS 1/10W (J)
ALL CAPACITORS IN μF 50WV (K)
ALL INDUCTORS IN μH (J)
ALL ELECTROLYTIC CAPACITORS IN μF/WV (M)

VIF-NORMAL
SCHEMATIC DIAGRAM
No.11-9 V122208M
A3

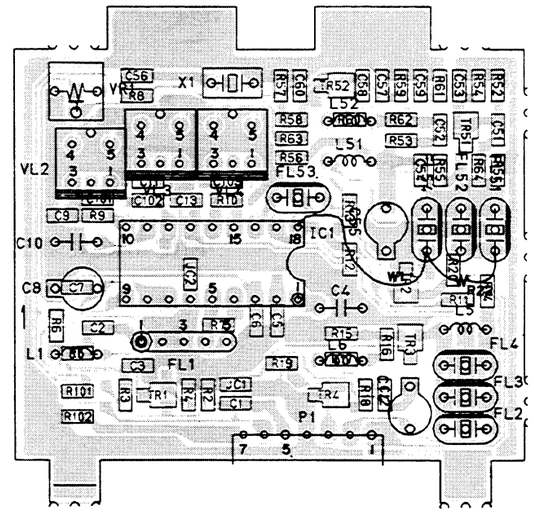



NOTE
UNLESS OTHERWISE SPECIFIED
ALL RESISTORS IN OHMS 1/10W (J)
ALL CAPACITORS IN μF 50WV (K)
ALL INDUCTORS IN μH (J)
ALL ELECTROLYTIC CAPACITORS IN μF/WV (M)

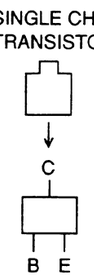
B (POWER SUPPLY) LINE

INDICATED VOLTAGES WERE MEASURED
DURING E-E (STOP) MODE.
(WHEN A STATION WAS BEING RECEIVED)

VS-G240/245/440/445EDG
VS-G250EM-K
VIF-EDG
SCHEMATIC DIAGRAM
No.11-10 V122209M
A3

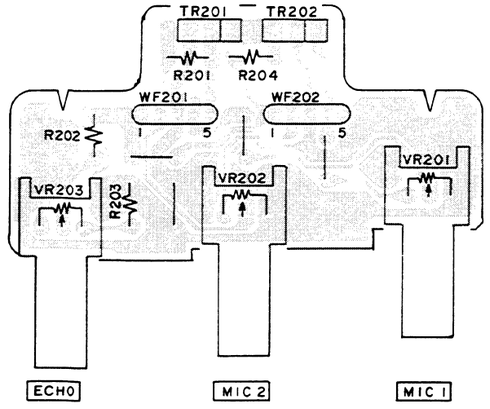



SINGLE CHIP TRANSISTOR

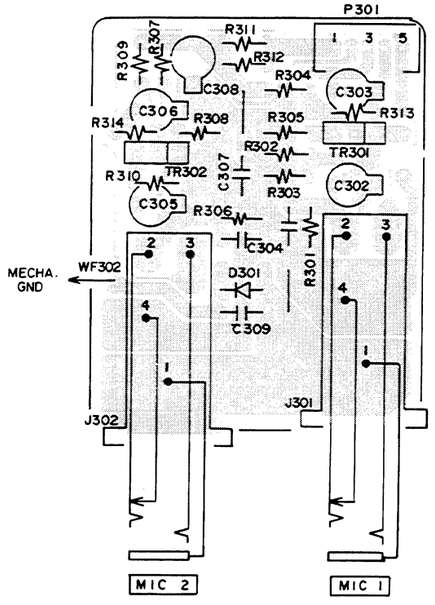



**VIF-EDG PCB F5001A5030**

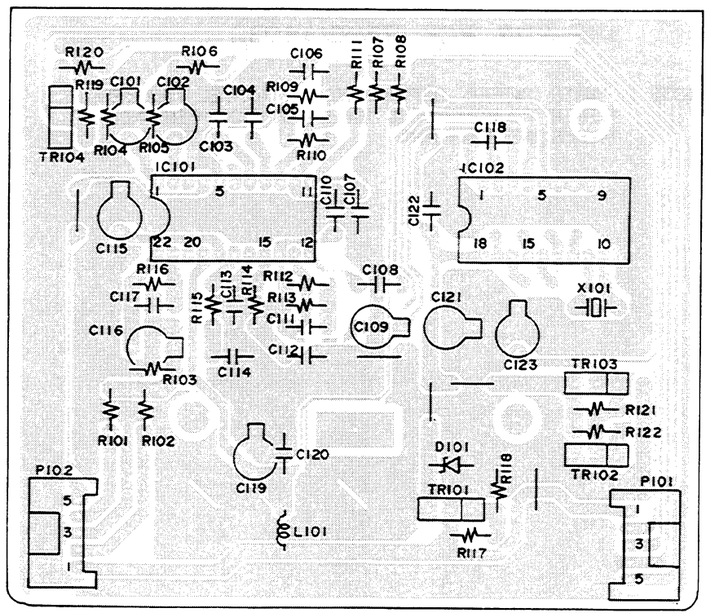
NOTE : PARTS DIFFER DEPENDING ON MODEL NUMBER. REFER TO SCHEMATIC DIAGRAMS FOR PERTINENT PARTS INFORMATION.



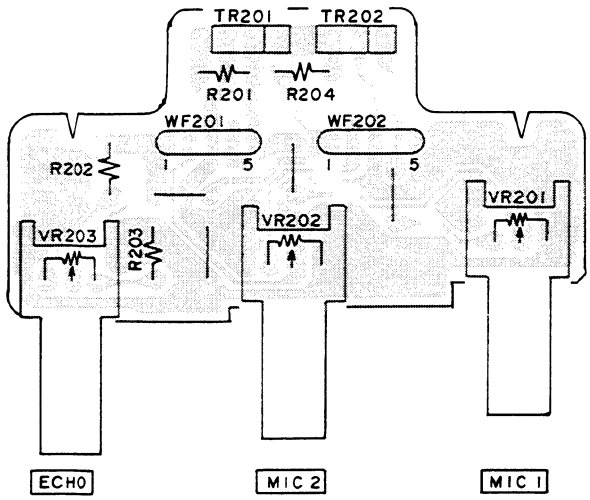

VOLUME PCB V1222A502B



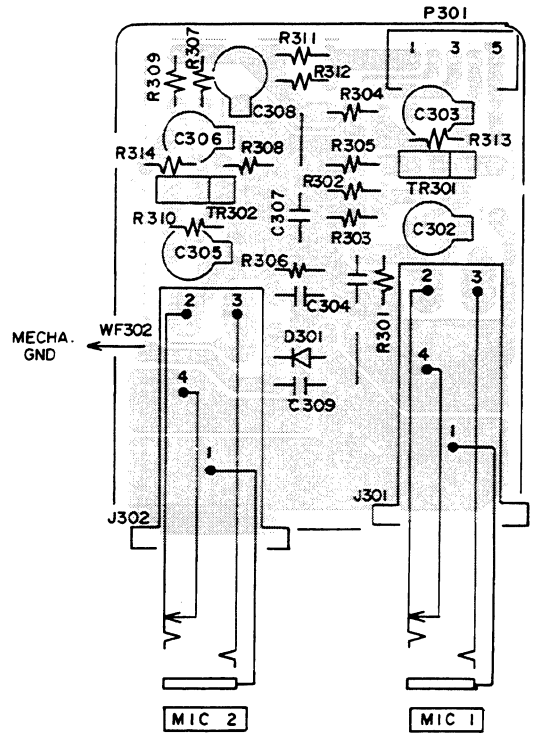

MIC JACK PCB V1222A502C



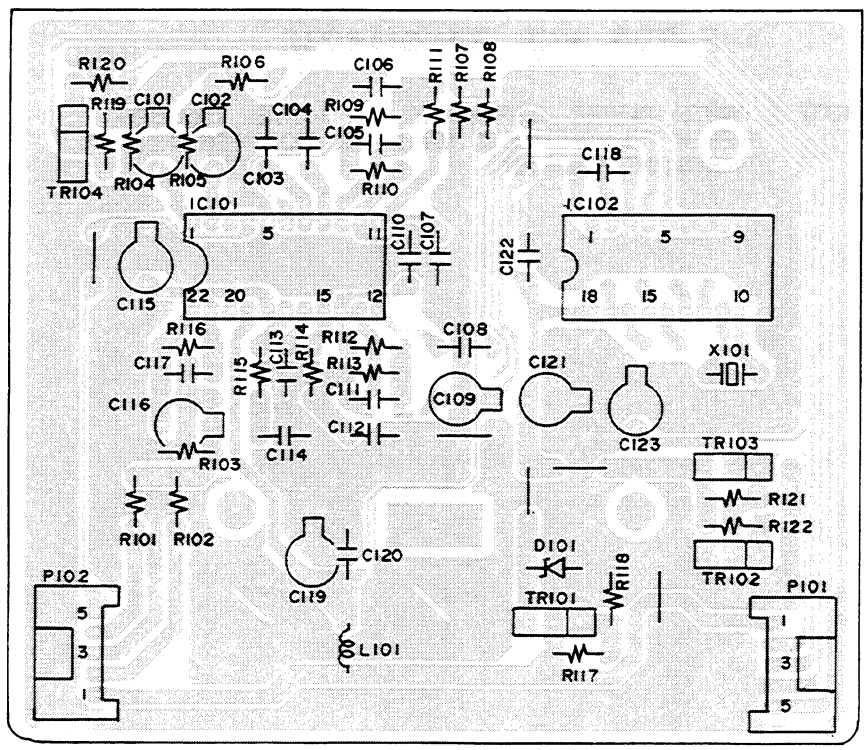

ECHO PCB V1222A502A



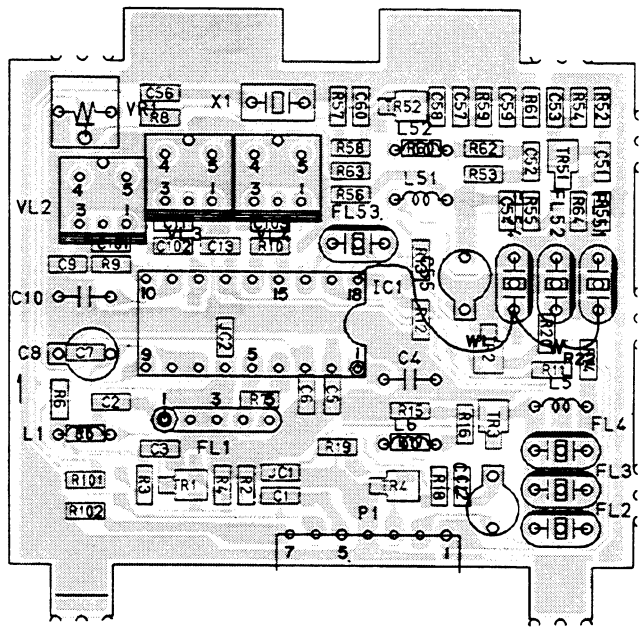

VOLUME PCB V1222A502B



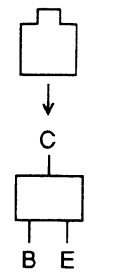

MIC JACK PCB V1222A502C




ECHO PCB V1222A502A




SINGLE CHIP
TRANSISTOR



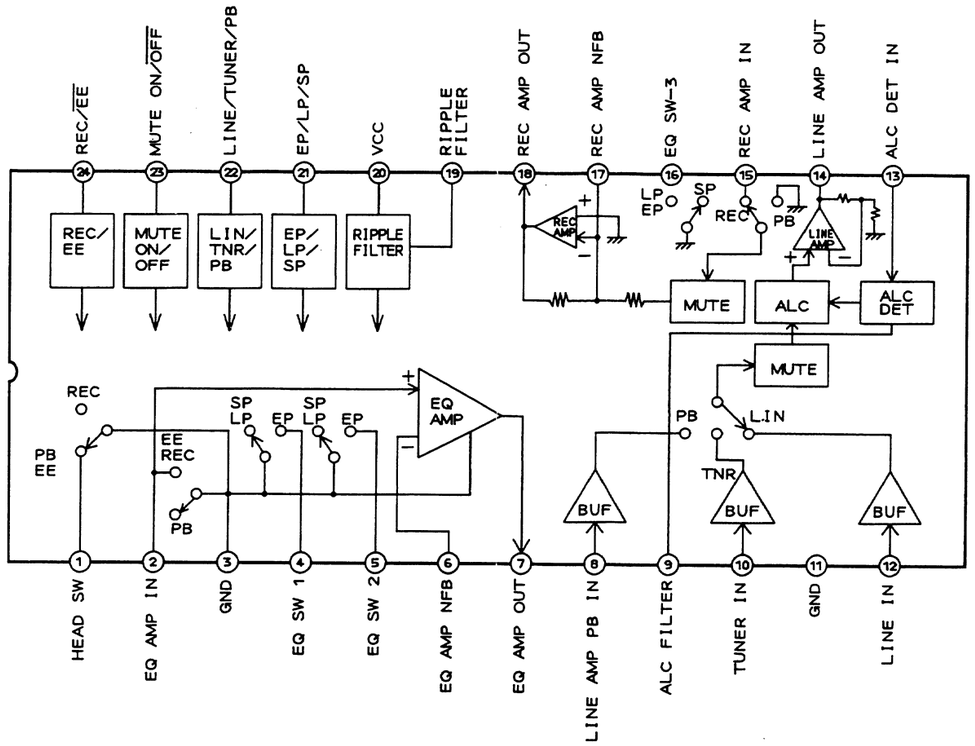

**VIF-EDG PCB F5001A5030**

NOTE : PARTS DIFFER DEPENDING ON MODEL NUMBER. REFER TO SCHEMATIC DIAGRAMS FOR PERTINENT PARTS INFORMATION.

# VS-G250EM-K
# KARAOKE
# SCHEMATIC DIAGRAM

No.11-11 V122210M
A2

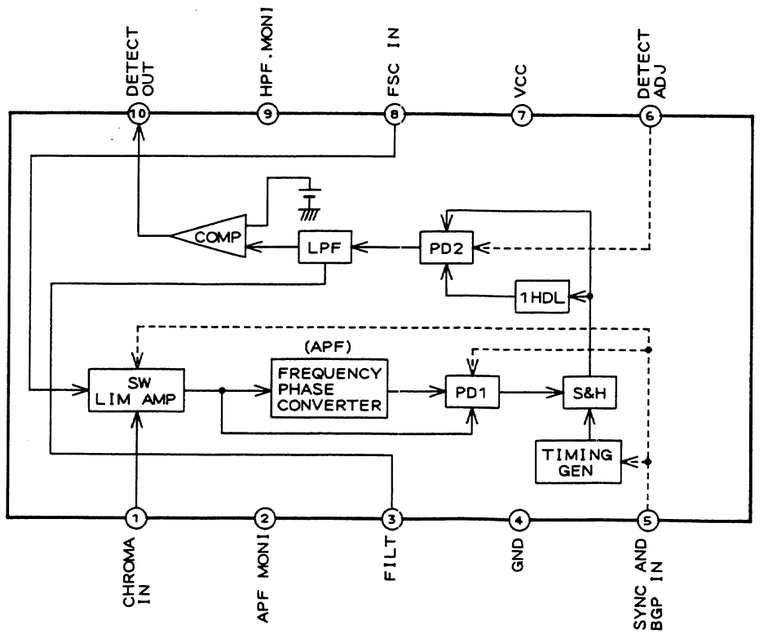
## LA7285 (AUDIO SIGNAL REC/PB AMP)




SWITCH FUNCTION

| | DC LEVEL | | |
|---|---|---|---|
| | 0 ~ 1.0V | 1.8 ~ 2.6V | 3.6V |
| ㉑PIN | SP | LP | EP |
| ㉓PIN | PB | TUNER | LINE |

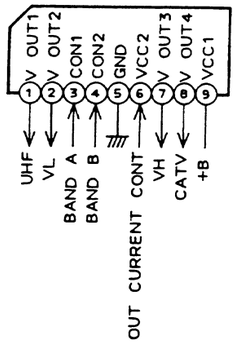
## LA7356 (PAL/SECAM DETECTOR)




## LA7440M/LA7447BM (Y/C SIGNAL PROCESSOR)

| PIN No. | PORT NAME | I/O | FUNCTION |
|---|---|---|---|
| 1 | MAIN-EMPH | – | Main emphasis filter pin. |
| 2 | NL-EMPH | – | Main emphasis filter. |
| 3 | PIC-CTL/EDIT | – | Picture control (soft: 2.0 - 2.45 V, hard: 2.55 - 3.0V)/edit (3.8 V or more). |
| 4 | AGC-TC2 | – | Capacitor connecting pin for AGC DET. |
| 5 | YNR-CTL | – | YNR-OFF: 1.0 V or less, YNR-CTL: 1.5 - 2.5 V, YNR-STRONG: 3.5 V or more. |
| 6 | NC-CTL | – | NC (noise cancel) off (PB): 1.5 V or less, NC-CTL (PB): 2.0 - 3.0 V. |
| 7 | VIDEO-IN | I | REC/E-E video signal input. |
| 8 | Vcc | – | +5 V power supply. |
| 9 | C-SYNC OUT | O | Composite sync signal output. |
| 10 | VCA-FILT | – | Capacitor connecting pin for VCA. |
| 11 | VIDEO-OUT | O | E-E or PB video signal out. |
| 12 | C.ROT | I | Chroma rotary pulse input. |
| 13 | VCA-IN | I | VCA AMP input. |
| 14 | QV,QH,CHA-IN | I | Quasi V-pulse & Quasi H-pulse input/character signal input. |
| 15 | CCD DRIVE | O | Y signal out pin to Y-CCD. |
| 16 | AGC-TC1/BAL | – | Capacitor connection pin for AGC-TC1 and balancer. |
| 17 | C-CCD DRIVE1 | O | Chroma signal out pin to chroma CCD1. |
| 18 | M/$\overline{M}$ | – | L: except NTSC (50 Hz), H: NTSC (60 Hz). (7440M only) |
| | NL-ON | – | L or H: NL OFF, M: NL ON (weak). |
| | DETAIL-ENHA | – | L or H: detail enhancer normal, M: weak & fc down. |
| 19 | C-CCD DRIVE2 | O | Chroma signal out pin to chroma CCD2. |
| 20 | GND | – | Ground terminal. |
| 21 | C-CCD IN | I | Chroma signal input pin from chroma CCD. |
| 22 | MODE-CTL | – | SP: 0 - 1.2 V, LP: 2.0 - 2.7 V, EP: 3.9 - 5.0 V. |
| 23 | CHROMA-IN | I | Chroma signal input from comb filter. |
| | SP CS-STOP | – | H: SP carrier shift stop. |
| 24 | NAP CTL | – | NAP: 3.3 - 5.0 V, B.M out: 2.0 - 2.7 V, THRU: 0 - 1.2 V. |
| 25 | CHROMA-OUT | O | PB chroma signal output. H (SECAM mode): mute ON. |
| 26 | $\overline{P}$/S/N | – | Colour mode switching pin (NTSC: 3.9 - 5.0 V, MESEC: 2.0 - 2.7 V, PAL: 0-1.2V). |
| 27 | VXO-IN1 | I | Crystal1 connecting pin (7440M: 3.58 MHz, 7447BM: 4.43 MHz). |
| 28 | VXO-OUT1 | O | Crystal1 connecting pin (7440M: 3.58 MHz, 7447BM: 4.43 MHz). |
| 29 | REC-APC FIL | – | Capacitor connecting pin for REC APC detector. |
| | TRICK-H | – | 3.9 V or more after COMB in SP mode. |
| 30 | XO-OUTA | O | Crystal connecting pin (4.43 MHz, 7440M only). |
| 31 | XO-OUTB | O | Crystal connecting pin. |
| 32 | VXO-IN2 | I | Crystal connecting pin (4.43 MHz, 7440M only). |
| 33 | Vcc-1 | – | +5 V power supply pin. |
| 34 | BGP-OUT | O | Burst gate pulse output pin. |
| 35 | FILT-CTL | – | H: 3.58 MHz, L: 4.43 MHz. |
| 36 | SLD-FILT | – | Capacitor connecting pin for SLD. |
| 37 | AFC/APC FILT | – | Capacitor connecting pin for AFC DET (REC) or APC DET (PB). |
| 38 | REC C-OUT | O | REC low chroma signal output. |
| | PB C-IN | I | PB low chroma signal input. |
| 39 | KILL-FILT | – | Capacitor connecting pin for killer detector. |
| 40 | KILLER-OUT | O | REC: APC killer out (H: killer ON). |
| | SLD-OUT | O | PB: side lock detector pulse output. |
| 41 | ACC-FILT | – | Capacitor connecting pin for ACC AMP. |
| 42 | GND | – | Ground pin. |
| 43 | PB FM-IN | I | PB-Y FM signal input. |
| 44 | MOD-OUT | O | REC-Y modulator output signal. |
| | DOC-STOP | – | Drop-out compensator control (H: DOC stop). |
| 45 | VREG | – | 4.2 V regulator out. |
| 46 | REC-Y | O | REC-Y signal output. |
| | MAIN DE-EMPH OUT | O | Main de-emphasis output. |
| 47 | CLAMP | I | Clamp circuit input. |
| 48 | EMPH-OUT | – | Main emphasis out. |
| | R/P CTL | – | REC/PB control (PB: H). |

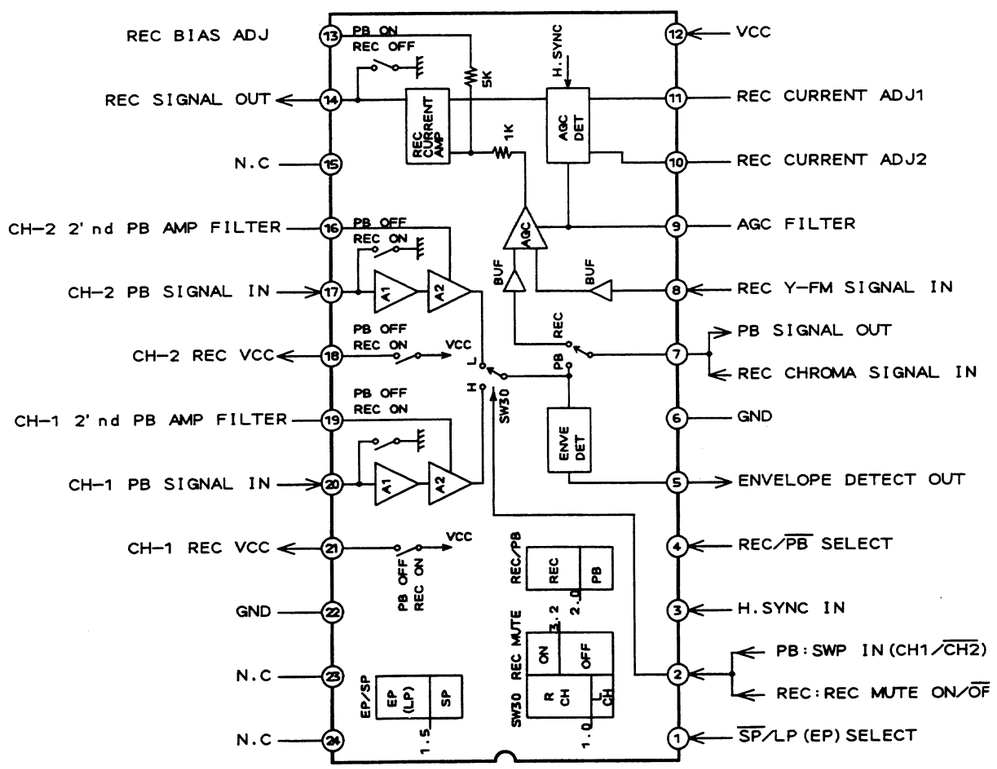
## LA7910 (TUNER BAND SELECTOR)



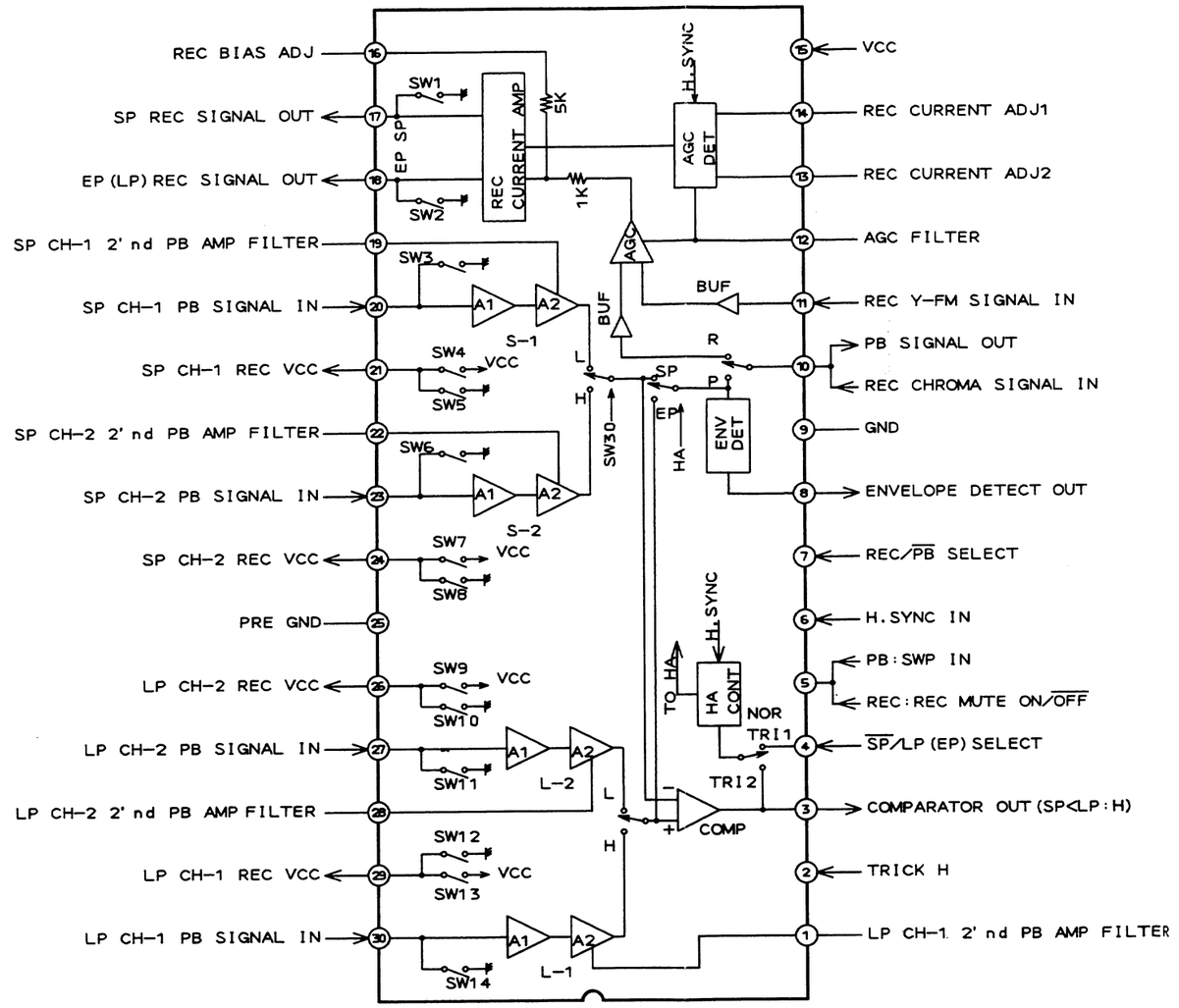

| INPUT | | OUTPUT | | | |
|---|---|---|---|---|---|
| CON1 | CON2 | V OUT1 | V OUT2 | V OUT3 | V OUT4 |
| L | L | H | Z | Z | Z |
| H | L | Z | H | Z | Z |
| L | H | Z | Z | H | Z |
| H | H | Z | Z | Z | H |

Z:HIGH IMPEDANCE

## LM7411M (2-CH HEAD AMP/REC AMP)




## LM7416 (4-CH HEAD AMP/REC AMP)



## M37774M5H-389GP/390GP/391GP (SYSTEM CONTROL & SERVO MI-COM)

| PIN NO. | PORT NAME | I/O | FUNCTION |
|---|---|---|---|
| 1 | SYS RDY | O | Data transfer ready output. |
| 2 | TU PWM | O | Tuning voltage output for tuner (PWM). |
| 3 | CM PWM | O | Capstan motor's speed & phase error output (PWM). |
| 4 | DM PWM | O | Drum motor's speed & phase error output (PWM). |
| 5 | SRP | I | Supply reel pulse input. |
| 6 | TRP | I | Take up reel pulse input. |
| * 7 | NP | O | NTSC→PAL/NTSC 4.43 conversion select output (NTSC→PAL: H). |
| 8 | C.SYNC | I | Cmposite sync input (for video judge). |
| * 9 | NTSC | O | NTSC mode judge output (NTSC: H). |
| 10 | $\overline{EE}$ | O | E-E mode control pin. |
| 11 | $\overline{REMOCON}$ | I | Remote control signal input. |
| 12 | REC.S | O | REC start control output (for video section). |
| 13 | VP | O | Quasi V pulse signal output. |
| 14 | V.SWP | O | Video head switching pulse output. |
| 15 | C.ROT | O | Chroma rotation pulse output pin. |
| 16 | HEAD CTL | O | Video head SP/LP select. |
| 17 | COMP OUT | O | Comparator input (for head select when CUE/REV). |
| 18 | I-HQ PWM | O | I-HQ ANC voltage output. |
| 19 | $\overline{S}$/L/E | O | Circuit switching regarding the tape speed (SP/LP/EP). |
| 20 | $\overline{P.DOWN}$ | I | Power down detect input. |
| 21 | $\overline{SHORT}$ | I | Power supply abnormal condition detect input (L : REG voltage is too high). |
| 22 ~ 25 | RSW1 ~ 4 | I | Input from the rotary (mecha position detect) switch 1 ~ 4. |
| 26,81 | VCC | – | +5 V power supply. |
| 27 | TRQUP | O | Loading motor torque control. |
| 28 | LM F | O | Loading motor direction control (forward). |
| 29 | LM R | O | Loading motor direction control (reverse). |
| 30,44,53 | N.C | – | No connection. |
| 31 | A.EE2 | O | Audio EE/$\overline{PB}$ select control output. |
| 32 | $\overline{A.OSC}$ | O | Audio bias OSC start control. |
| 33 | A.REC | O | Audio REC start control. |
| 34 | A.EE | O | Audio EE/$\overline{PB}$ select control output. |
| 35 | NUB | – | No connection. |
| 36 | NUA | – | No connection. |
| 37 | $\overline{RESET}$ | I | Reset input. |
| 38 | X IN | I | Main clock OSC input (f = 16 MHz). |
| 39 | X OUT | O | Main clock OSC output (f = 16 MHz). |
| 40 | CLK SEL | I | Clock select input<br>(H : main & sub clock OSC are active, L : only sub clock OSC is active). |
| 41 | VSS | – | Ground. |
| 42 | XC IN | I | Sub clock OSC input (f = 32.768 kHz). |
| 43 | XC OUT | O | Sub clock OSC output (f = 32.768 kHz). |
| 45 | $\overline{INT}$/EXT | O | Input select control output. |
| 46 | $\overline{TV}$/VCR | O | TV/VIDEO select control output. |
| 47 | I² C SDA | I/O | EEP ROM serial data input/output. |
| 48 | I² C SCL | O | EEP ROM serial clock output. |
| 49 | T.MUTE | O | Tuner mute control. |
| 50 | A.MUTE | O | Audio mute control. |
| 51 | V.SYNC MON | O | V.SYNC monitor output. |
| 52 | I-HQ MD2 | O | I-HQ mode control out (high output level tape). |
| 54 | $\overline{AFT}$ | O | AFT on/off control output. |
| 55 | BAND B | O | Tuner band select output. |
| 56 | BAND A | O | Tuner band select output. |
| 57 | C+.DATA | O | Control data for Video/Audio signal IN/OUT switching IC. |
| 58 | VPS RDY | I | VPS/PDC MI-COM code data transfer ready signal input. |
| 59 | REC SAF | I | REC safety SW input. |
| 60 | $\overline{T.POWER}$ | O | AL 9 V ON/OFF control / Echo signal muting control. (EM-K only) |
| 61 | $\overline{F}$/R | O | Capstan motor direction control (FWD/REV). |
| 62 | CM STOP | O | Capstan motor stop control. |

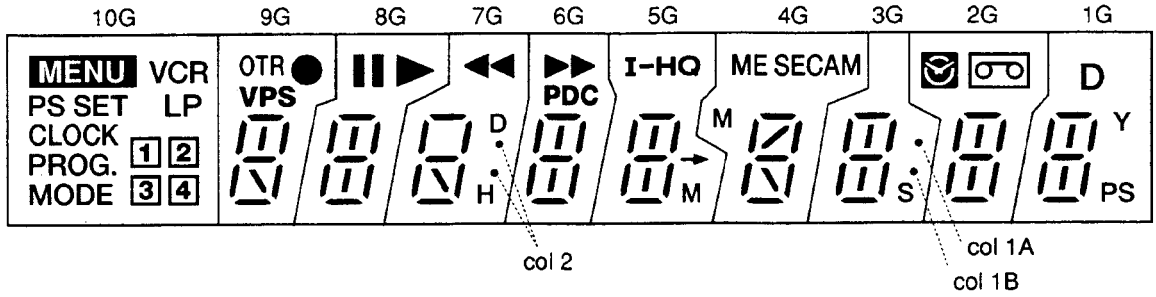
| PIN NO. | PORT NAME | I/O | FUNCTION |
|---|---|---|---|
| 63 | DEC.CTL | I | Decoder on/off control input. |
| 64 | $\overline{CTL.GAIN}$ | O | CTL AMP gain select control when FF/REW . |
| 65 | AMP VCC | O | +5 V power supply for analog AMP section. |
| 66 | DM.PG | I | Drum motor PG signal input. |
| 67 | DM.FG | I | Drum motor FG signal input. |
| 68 | CM.FG | I | Capstan motor FG signal input. |
| 69 | AMP VREF OUT | O | Reference voltage output for analog AMP. |
| 70 | AMP VREF IN | I | Reference voltage input for analog AMP. |
| 71 | CLAMPF | I | CTL clamp AMP positive input. |
| 72 | CLAMPR | I | CTL clamp AMP negative input. |
| 73 | CTLAMP OUT | O | CTL AMP output. |
| 74 | AMP.C | – | Capacitor connecting pin for CTL AMP. |
| 75 | CTLAMP IN | I | CTL AMP input. |
| 76 | CTL+SWOUT | O | CTL switched output. |
| 77 | CTL+ | I | CTL positive side input/output. |
| 78 | CTL– | I | CTL negative side input/output. |
| 79 | CTL VSS | – | Ground for CTL. |
| 80 | AMP VSS | – | Ground for AMP. |
| 82 | VREF | – | Reference voltage input for A/D convertor. |
| 83 | SDP | I | SECAM (MESECAM) judge input (SECAM/MESEC:H). |
| 84 | CK | I | 4.43/3.58 NTSC video judge input. |
| 85 | ES | I | End sensor input. |
| 86 | SS | I | Start sensor input. |
| 87 | I-HQ MD1 | O | I-HQ mode control output (low output level tape). |
| * 88 | 3.58REC | O | 3.58 MHz NTSC recording control (EM-K only). |
| 89 | $\overline{INT}$/EXT | O | Internal/external input select control. (Without DEC model only.) |
| | C+.CLK | O | Clock signal to Video/Audio signal IN/OUT switching IC. (With DEC model only) |
| 90 | AFT | I | AFT error signal (analog) input. |
| 91 | TRICK | O | H when trick mode. |
| 92 | ENV.DET | I | Video envelope detect input. |
| 93 | C.SYNC | I | Composite sync input (for internal Vsync separator). |
| * 94 | $\overline{P}$/S/N | O | PAL/SECAM/NTSC select control. |
| * 95 | SEC.MES | O | PAL/SECAM/MESECAM select control. |
| 96 | $\overline{SP}$ | O | Tape speed select output. |
| 97 | EE | O | EE control pin. |
| 98 | SYS SO | O | Serial data out to operation MI-COM |
| 99 | SYS SI | I | Serial data in from operation MI-COM. |
| 100 | SYS CLK | O | Serial clock output to operation MI-COM. |

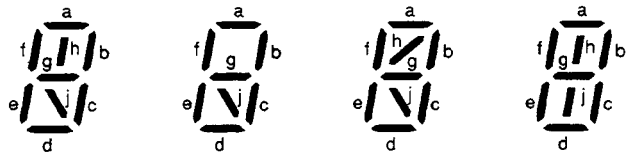
* COLOUR SYSTEM CONTROL CONDITION

| | | | $\overline{SEC.MES}$ 95 PIN | | 3.58REC 88 PIN | | $\overline{P}$/S/N 94 PIN | | NTSC 9 PIN | | NP 7 PIN | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| INPUT SIGNAL | MODE | | REC | PB | REC | PB | REC | PB | REC | PB | REC | PB |
| PAL, SECAM | AUTO | S-DET 'L' | H | H | L | L | L | L | L | L | L | L |
| | | S-DET 'H' | L | L | L | L | M | M | L | L | L | L |
| | MANU | PAL | H | H | L | L | L | L | L | L | L | L |
| | | MESECAM | L | L | L | L | M | M | L | L | L | L |
| NTSC | 3.58LINE REC | | H | – | H | – | H | – | H | – | L | – |
| | 4.43LINE REC | | H | – | L | – | H | – | H | – | L | – |
| | N→P PB | | – | H | – | L | – | H | – | H | – | H |
| | 4.43NT PB | | – | H | – | L | – | H | – | H | – | L |

FLD FV681G

GRID ASSIGNMENT




ANODE CONNECTION

| | 10G | 9G | 8G | 7G | 6G | 5G | 4G | 3G | 2G | 1G |
|---|---|---|---|---|---|---|---|---|---|---|
| P1 | MENU | a | a | a | a | a | a | a | a | a |
| P2 | 1 | b | b | b | b | b | b | b | b | b |
| P3 | 3 | c | c | c | c | c | c | c | c | c |
| P4 | CLOCK | d | d | d | d | d | d | d | d | d |
| P5 | MODE | e | e | e | e | e | e | e | e | e |
| P6 | 2 | f | f | f | f | f | f | f | f | f |
| P7 | 4 | g | g | g | g | g | g | g | g | g |
| P8 | PS SET | h | h | col 2 | h | h | h | h | h | h |
| P9 | PROG. | j | j | j | j | j | j | j | j | j |
| P10 | VCR | OTR | ▮ | ◀◀ | ▶▶ | I-HQ | ME | S | | D |
| P11 | LP | VPS | ▮ | D | PDC | → | M | col 1A | | Y |
| P12 | — | ● | ▶ | H | — | M | SECAM | col 1B | — | PS |

## 8. VIF-NOR BLK (EXCEPT EDG,EM-K)

| Ref. No. | Part No. | Description |
|---|---|---|
| FL1-A | EH-373916N | FILTER CE SAF36.9MZ70Z [EA] |
| FL1-B | EH-373917N | FILTER CE SAF39.5MZ70Z [G240/G245/G445EK] |
| FL1-C | EH-432629N | FILTER CE SAF38.9MZW70Z [EM,EO,EOH,EOG] |
| FL1-D | EH-376120N | FILTER CE SAF38.9MW70Z [G246EK] |
| FL2-A | EH-433121N | FILTER CE SFSH5.5MCB-TF21 T05 [EXCEPT EK] |
| FL2-B | EH-433122N | FILTER CE SFSH6.0MCB-TF21 T05 [EK] |
| FL3-A | EH-368948N | FILTER CE TPS5.5MWA 5.5000MHZ [EA,EO,EOH,EOG] |
| FL3-B | EH-405642N | FILTER CE TPS6.0MB-TF21 T05 [EK] |
| FL3-C | EH-416618N | FILTER CE TPS5.5MB-TF21 T05 [EM] |
| IC1 | EI-368809N | IC M51496P |
| L1-A | EO-428463N | COIL FIX 1 EL0405RA T05 2R7J [EXCEPT EK] |
| L1-B | EO-403936N | COIL FIX 1 EL0405RA T05 1R2J [G240/G245/G445EK] |
| L1-C | EO-432680N | COIL FIX 1 EL0405RA T05 1R5J [G246EK] |
| L7-A | EO-408957N | COIL FIX 1 EL0405RA T05 180J [EA,EM] |
| L7-B | EO-419251N | COIL FIX 1 EL0405RA T05 150J [G240/G245/G445EK] |
| L7-C | EO-410256N | COIL FIX 1 EL0405RA T05 100J [EO,EOH,EOG,G246EK] |
| L8 | EO-403273N | COIL FIX 1 EL0405RA T05 330J |
| TR1 | ET-432740N | TR C.2SC2480 T,S TXT08E |
| TR2 | ET-416932N | TR C.2SB709A R,S TXT08E |
| VL3-A | EO-432610N | COIL TUN 1 F5001-097 SIF [EXCEPT EK] |
| VL3-B | EO-432611N | COIL TUN 1 F5001-098 SIF [EK] |
| VL4-A | EO-432605N | COIL TUN 1 F5001-093A AFT [EA] |
| VL4-B | EO-432607N | COIL TUN 1 F5001-094 AFT [EXCEPT EA] |
| VL5-A | EO-432600N | COIL TUN 1 F5001-088 LLD [EA] |
| VL5-B | EO-432601N | COIL TUN 1 F5001-089 LLD [EXCEPT EA] |
| VR51 | EV-389476N | R S-FIX H T05EVNDXAA03 0.1W103 |

## 9. PRE-AMP P.C. BOARD

| Ref. No. | Part No. | Description |
|---|---|---|
| D851 | ED-307573N | D SILICON H 1SS131T-77 T26 [4HEADS MODEL] |
| IC851-A | EI-432778N | IC LA7416M-TP-T1 FPT1T24P [4HEADS MODEL] |
| IC851-B | EI-432779N | IC LA7411M-TP-T1 FPT1T24P [2HEADS MODEL] |
| L851 | EO-345881N | COIL FIX 1 EL0606SKI 101J |
| P851-A | EJ-422061N | SOCKET 00 6216 018 100 18P [4HEADS MODEL] |
| P851-B | EJ-432818N | SOCKET 52044-1445 14P [2HEADS MODEL] |
| P852 | EJ-428388N | SOCKET 04FE-BT-VK-N 4P [2HEADS MODEL] |
| P853 | EJ-422094N | SOCKET TKC-F06X-E1 6P |
| P854 | EJ-422094N | SOCKET TKC-F06X-E1 6P [4HEADS MODEL] |
| TR853 | ET-361961N | TR DTC144ES T05 [4HEADS MODEL] |

## 10. DETECT P.C. BOARD

| Ref. No. | Part No. | Description |
|---|---|---|
| PH401 | ET-432910N | DETECTOR GP1U271X |

## 11. CANAL PLUS P.C. BOAR (EDG, G245/G445EDG, G240EOH(E), G254EOH(Y1), G255/G455EOH)

| Ref. No. | Part No. | Description |
|---|---|---|
| D901 | ED-307573N | D SILICON H 1SS131T-77 T26 |
| IC901 | EI-429904N | IC BA7631F |
| IC902 | EI-425188N | IC BA7630S |
| L901 | EO-345881N | COIL FIX 1 EL0606SKI 101J |
| L902 | EO-345881N | COIL FIX 1 EL0606SKI 101J |
| L903 | EO-345881N | COIL FIX 1 EL0606SKI 101J |
| P901 | EJ-427524N | SOCKET 21PIN-S BLACK 21P |
| P902 | EJ-427523N | SOCKET 21PIN-S BLUE 21P |
| P903 | EJ-429905N | SOCKET TSK-B17X-A1 17P |
| TR901 | ET-361961N | TR DTC144ES T05 |
| TR902 | ET-364291N | TR DTA144ES T05 |
| TR903 | ET-392663N | TR 2SC1740S R,S T05 |
| TR904 | ET-392746N1 | TR 2SA933AS R,S T05 |

## 12. ECHO P.C. BOARD (EM-K)

| Ref. No. | Part No. | Description |
|---|---|---|
| D101 | ED-404220N | D ZENER H MTZJ9.1B T26 |
| IC101 | EI-430862N | IC BA7725S |
| IC102 | EI-430864N | IC BU9252S |
| L101 | EO-403270N | COIL FIX 1 EL0405RA T05 101J |
| L102 | EO-403270N | COIL FIX 1 EL0405RA T05 101J |
| TR101 | ET-419014N | TR 2SC1741S Q,R T05 |
| TR102 | ET-354365 | TR DTC114YS |
| TR103 | ET-364082N | TR DTA114TS T05 |
| TR104 | ET-392663N | TR 2SC1740S R,S T05 |
| X101 | EI-430866N | OSC CE CSB455E 455KHZ |

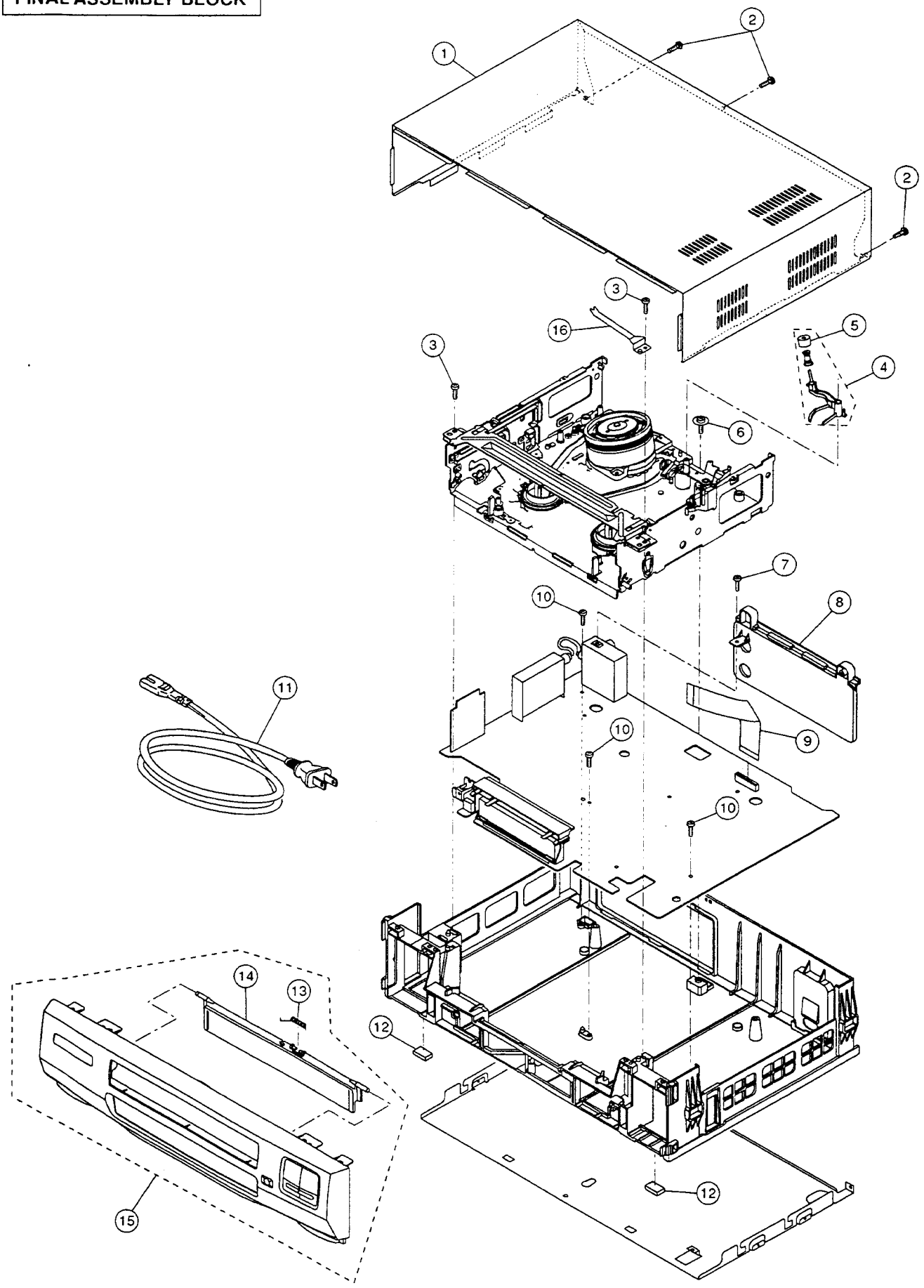
## 13. VOLUME P.C. BOARD (EM-K)

| Ref. No. | Part No. | Description |
|---|---|---|
| TR201 | ET-361901N | TR DTC124ES T05 |
| TR202 | ET-392746N1 | TR 2SA933AS R,S T05 |
| VR201 | EV-433090N | VR ROTA.RK09K1110 H6.5L20 A502 |
| VR202 | EV-433090N | VR ROTA.RK09K1110 H6.5L20 A502 |
| VR203 | EV-433092N | VR ROTA.RK09K1110 H6.5L20 B203 |

## 14. MIC JACK P.C. BOARD (EM-K)

| Ref. No. | Part No. | Description |
|---|---|---|
| D301 | ED-307573N | D SILICON H 1SS131T-77 T26 |
| J301 | EJ-433131N | PHONE J 3P YKB21-5248 6.3 |
| J302 | EJ-433131N | PHONE J 3P YKB21-5248 6.3 |
| TR301 | ET-392663N | TR 2SC1740S R,S T05 |
| TR302 | ET-392663N | TR 2SC1740S R,S T05 |

## FINAL ASSEMBLY BLOCK



## 15. FINAL ASSEMBLY BLOCK

| Ref. No. | Part No. | Description |
|---|---|---|
| 1 | SP-433447N | COVER UPPER GX(2) (SG) |
| 2 | ZS-393515N | BT BID30X10STL BZN (SG) |
| 3 | ZS-426412N | BT BID30X10STL CMT (SG) |
| 4 | HZ-428509N | HEAD CLEANER PART (SG) [EXCEPT G240/G440EA, G245/G445EK/EO] |
| 5 | HZ-417681N | ROLLER HEAD CLEANER(2) (SG) [EXCEPT G240/G440EA, G245/G445EK/EO] |
| 6 | ZS-426416N | BT PAN30X10STL CMT C080 (SG) |
| 7 | ZS-323728N | BID30X05STL CMT (SG) |
| 8-A | SP-432477N | PANEL REAR JACK EA2 (SG) [EA,EM] |
| 8-B | SP-429099N | PANEL REAR JACK EDG (SG) [G240/G440EDG] |
| 8-C | SP-429100N | PANEL REAR JACK EK (SG) [EK,EO,G240/G241/G245/G445EOH(Y1)] |
| 8-D | SP-432478N | PANEL REAR JACK EM-K (SG) [EM-K] |
| 8-E | SP-432488N | PANEL REAR JACK EDG2 (SG) [G245/445EDG] |
| 8-F | SP-432487N | PANEL REAR JACK EOG2 (SG) [EOG] |
| 8-G | SP-432485N | PANEL REAR JACK EOH2 (SG) [G240EOH[E],G254EOH[Y1],G255/ G455EOH] |
| 9-A | EW-432812N | CORD FFC BD P1.25 L130 14P [2HEADS MODEL] |
| 9-B | EW-422530J | CORD FFC BD P1.25 L150 18P [4HEADS MODEL] |
| 10 | ZS-376521N | BT BID30X08STL CMT (SG) |
| 11-A | EW-425599N | AC CORD 200S CW2101CW4771 B S [EA] |
| 11-B | EW-430842N | AC CORD 200S SF200 SF201 E [EXCEPT EA] |
| 12 | SA-422907N | FOOT AX (SG) |
| 13 | ZG-429541N | SP MASK(4) (SG) |
| 14-A | SE-432523N | MASK CASSETTE VS-G240(E) (SG) [G240EOH] |
| 14-B | SE-432551N | MASK CASSETTE VS-G240(E2) (SG) [G240EA/EDG] |
| 14-C | SE-432550N | MASK CASSETTE VS-G240(E3) (SG) [G240EM] |
| 14-D | SE-433857N | MASK CASSETTE VS-G240(E4) (SG) [G240EK] |
| 14-E | SE-432549N | MASK CASSETTE VS-G241(E) (SG) [G241EOH] |
| 14-F | SE-432548N | MASK CASSETTE VS-G245(E) (SG) [G245EA] |
| 14-G | ES-432547N | MASK CASSETTE VS-G245(E2) (SG) [G245EDG] |
| 14-H | SE-432546N | MASK CASSETTE VS-G245(E3) (SG) [G245EK] |
| 14-I | SE-432545N | MASK CASSETTE VS-G245(E4) (SG) [G245EO/EOH] |
| 14-J | SE-433818N | MASK CASSETTE VS-G246(E) (SG) [G246EA] |
| 14-K | SE-433476N | MASK CASSETTE VS-G246(E) (SG) [G246EK] |
| 14-L | SE-432536N | MASK CASSETTE VS-G247(G) (SG) [G247EOG] |
| 14-M | SE-433474N | MASK CASSETTE VS-G250(E) (SG) [G250EM-K] |
| 14-N | SE-432543N | MASK CASSETTE VS-G255(E) (SG) [G255EOH[E]] |
| 14-O | SE-432542N | MASK CASSETTE VS-G255(E2) (SG) [G255EOH[Y1]] |
| 14-P | SE-432535N | MASK CASSETTE VS-G257(G) (SG) [G257EOG] |
| 14-Q | SE-432544N | MASK CASSETTE VS-G254(E) (SG) [G254EOH] |
| 14-R | SE-432579N | MASK CASSETTE V-G440(E2) (SG) [G440EA/EDG] |
| 14-S | SE-432580N | MASK CASSETTE V-G445(E) (SG) [G445EA] |
| 14-T | SE-432581N | MASK CASSETTE V-G445(E2) (SG) [G445EDG] |
| 14-U | SE-432582N | MASK CASSETTE V-G445(E3) (SG) [G445EK] |
| 14-V | SE-432583N | MASK CASSETTE V-G445(E4) (SG) [G445EO/EOH] |
| 14-W | SE-432585N | MASK CASSETTE V-G455(E) (SG) [G455EOH[E]] |
| 14-X | SE-432586N | MASK CASSETTE V-G455(E2) (SG) [G455EOH[Y1]] |
| 14-Y | SE-432590N | MASK CASSETTE V-G457(G) (SG) [G457EOG] |
| 15-A | BD-432269N | PANEL F(A)G240EA PART (SG) |
| 15-B | BD-432271N | PANEL F(A)G240EDG PART (SG) |
| 15-C | BD-433856N | PANEL F(A)G240EK PART (SG) |
| 15-D | BD-432564N | PANEL F(A)G240EM(E/Y7)PART(SG) |
| 15-E | BD-432272N | PANEL F(A)G240EOH(E/Y1)PART(SG |
| 15-F | BD-432273N | PANEL F(A)G241EOH(Y1) PART(SG) |
| 15-G | BD-432274N | PANEL F(A)G245EA PART (SG) |
| 15-H | BD-432275N | PANEL F(A)G245EDG PART (SG) |
| 15-I | BD-432276N | PANEL F(A)G245EK PART (SG) |
| 15-J | BD-432277N | PANEL F(A)G245EO/EOH PART (SG) |
| 15-K | BD-432228N | PANEL F(C)G246EA PART (SG) |
| 15-L | BD-432229N | PANEL F(A)G247EOG PART (SG) |
| 15-M | BD-432230N | PANEL F(A2)G250EM-K PART (SG) |
| 15-N | BD-432231N | PANEL F(A)G255EOH(E) PART(SG) |
| 15-O | BD-432565N | PANEL F(A)G255EOH(Y1) PART(SG) |
| 15-P | BD-432232N | PANEL F(A)G257EOG PART (SG) |
| 15-Q | BD-428492N | PANEL F(A)G254EOH(Y1) PART(SG) |
| 15-R | BD-433475N | PANEL F(A)G246EK PART (SG) |
| 15-S | BD-432326N | PANEL F(B)G440EA PART (SG) |
| 15-T | BD-432327N | PANEL F(B)G440EDG PART (SG) |
| 15-U | BD-432328N | PANEL F(B)G445EA PART (SG) |
| 15-V | BD-432329N | PANEL F(B)G445EDG PART (SG) |
| 15-W | BD-432330N | PANEL F(B)G445EK PART (SG) |
| 15-X | BD-432331N | PANEL F(B)G445EO/EOH(Y1)PART(S |
| 15-Y | BD-432332N | PANEL F(B)G455EOH(E) PART(SG) |
| 15-Z | BD-432525N | PANEL F(B)G455EOH(Y1) PART(SG) |
| 15-XA | BD-432333N | PANEL F(B)G457EOG PART (SG) |

NOTE :
Parts will not be supplied if they are not listed in the parts list, even if they appear on the assembling illustrations with reference No.

## 16. ACCESSORY

| Ref. No. | Part No. | Description |
|---|---|---|
| 1 | EW-348414N | CORD PAL |
| 2-A | AV-428270N | REMOCON RC-X101E [G240EDG/EOH/EM,G241EOH, G250EM-K,G440EA/EDG] |
| 2-B | AV-428271N | REMOCON RC-X121E [G245/G445EDG/EO/EOH] |
| 2-C | AV-428272N | REMOCON RC-X121G [G247EOG] |
| 2-D | AV-428273N | REMOCON RC-X131E [G445EA] |
| 2-E | AV-433957N | REMOCON RC-X151E [G240EA] |
| 2-F | AV-433945N | REMOCON RC-X161E [G240EK] |
| 2-G | AV-433958N | REMOCON RC-X181E [G245/G246EA] |
| 2-H | AV-428265N | REMOCON RC-X511E [G245/G246/G445EK] |
| 2-I | AV-428266N | REMOCON RC-X521E [G254/G255EOH] |
| 2-J | AV-428267N | REMOCON RC-X521G [G257EOG] |
| 2-K | AV-428268N | REMOCON RC-X524E [G455EOH] |
| 2-L | AV-428269N | REMOCON RC-X524G [G457EOG] |

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| Part No. | Ref. No. | Part No. | Ref. No. | Part No. | Ref. No. | Part No. | Ref. No. |
|---|---|---|---|---|---|---|---|
| AV428265N | 16-2-H | BL428114N1 | 3-26 | ED422252N | 6-D225 | EI433099N | 6-IC401-B |
| AV428266N | 16-2-I | BM421746N1 | 4-6 | ED422519N | 6-D219 | EI433100N | 6-IC401-C |
| AV428267N | 16-2-J | BM428250N2 | 4-11 | ED425278N | 6-D215-A | EI433103N | 6-IC401-A |
| AV428268N | 16-2-K | BM433066N1 | 2-9 | ED425369J | 6-D208 | EJ416590N | 6-P201 |
| AV428269N | 16-2-L | BT432834N | 6-T201-B | ED427218N | 6-D404 | EJ422061N | 9-P851-A |
| AV428270N | 16-2-A | BT433085N | 6-T201-A | ED427506N | 6-D205 | EJ422094N | 9-P853 |
| AV428271N | 16-2-B | BVV1123D420A | 2-2-A | ED428366N | 6-D210 | EJ422094N | 9-P854 |
| AV428272N | 16-2-C | BVV1182D410C | 2-3-B | ED428367N | 6-D212 | EJ422169J | 4-5 |
| AV428273N | 16-2-D | BVV1182D420A | 2-2-B | ED428383N | 6-D411 | EJ422176N | 6-P402 |
| AV433945N | 16-2-F | BVV1182D420C | 2-2-C | ED428384N | 6-D4 | EJ422178N | 6-P401 |
| AV433957N | 16-2-E | BVV1205D410A | 2-3-A | ED428420J | 6-D209-A | EJ427523N | 11-P902 |
| AV433958N | 16-2-G | BVV1205D420A | 2-2-D | ED428420J | 6-D214-A | EJ427524N | 11-P901 |
| BAF5001V030A | 5-2-B | BV387610N | 6-MD1-A | EE405638N | 6-TU1-E | EJ428388N | 9-P852 |
| BAF5001V030B | 5-2-F | BV387611N | 6-MD1-E | EE419189N | 6-TU1-A | EJ429905N | 11-P903 |
| BAF5001V040A | 5-2-A | BV424914N03 | 3-2 | EE428206N | 6-TU1-F | EJ429906N | 6-P101 |
| BAF5001V040B | 5-2-E | BV424915N04 | 3-1 | EE428336N | 6-TU1-C | EJ429978N | 6-PJ102 |
| BAF5001V040C | 5-2-D | BV424919N09 | 3-49 | EE432823N | 6-TU1-B | EJ432818N | 9-P851-B |
| BAF5001V040D | 5-2-G | BV425222N | 6-MD1-B | EE432827N | 6-TU1-D | EJ432820N | 6-P601-B |
| BAF5001V040F | 5-2-C | BV427963N | 6-MD1-F | EF394702N | 6-F201 | EJ432822N | 6-P601-A |
| BAV1222V600B | 5-1-A | BV429837N | 6-MD1-D | EH368948N | 7-FL3 | EJ432949N | 6-PJ101 |
| BAV1222V600C | 5-1-B | BV429839N | 6-MD1-C | EH368948N | 8-FL3-A | EJ433131N | 14-J301 |
| BAV1222V600D | 5-1-H | EC416655N | 6-C436 | EH373916N | 8-FL1-A | EJ433131N | 14-J302 |
| BAV1222V600E | 5-1-I | EC418706N | 6-C204 | EH373917N | 8-FL1-B | EM428381N | 6-FL401 |
| BAV1222V600F | 5-1-N | EC418706N | 6-C205 | EH376120N | 8-FL1-D | EO345881N | 6-L101 |
| BAV1222V600G | 5-1-C | EC418706N | 6-C206 | EH405642N | 8-FL3-B | EO345881N | 6-L602 |
| BAV1222V600H | 5-1-F | EC418706N | 6-C207 | EH414623N | 7-FL2-A | EO345881N | 6-L675 |
| BAV1222V600J | 5-1-E | EC418706N | 6-C208 | EH416618N | 7-FL2-B | EO345881N | 6-L696 |
| BAV1222V600K | 5-1-L | EC418706N | 6-C209 | EH416618N | 8-FL3-C | EO345881N | 6-L698 |
| BAV1222V600L | 5-1-J | EC418759N | 6-C212 | EH428045N | 7-FL4 | EO345881N | 9-L851 |
| BAV1224V600C | 5-1-G | EC422101N | 6-C201 | EH432627N | 7-FL1 | EO345881N | 11-L901 |
| BAV1224V600D | 5-1-K | EC422101N | 6-C202 | EH432629N | 8-FL1-C | EO345881N | 11-L902 |
| BAV1224V600F | 5-1-D | EC422104N | 6-C210-B | EH433121N | 7-FL52-A | EO345881N | 11-L903 |
| BAV1224V600H | 5-1-M | EC422106N | 6-C220 | EH433121N | 7-FL54 | EO379354N | 6-L2-A |
| BAV1226V600B | 5-1-O | EC422107N | 6-C222 | EH433121N | 8-FL2-A | EO390849N | 6-L1 |
| BAV1226V600C | 5-1-P | EC422421N | 6-C213 | EH433122N | 7-FL52-B | EO403270N | 6-L352-A |
| BAV1226V600D | 5-1-R | EC428385N | 6-C211 | EH433122N | 7-FL53 | EO403270N | 12-L101 |
| BAV1226V600E | 5-1-S | EC431086N | 6-C236 | EH433122N | 8-FL2-B | EO403270N | 12-L102 |
| BAV1226V600F | 5-1-T | EC432918N | 6-C210-A | EH433123N | 7-FL51 | EO403273N | 8-L8 |
| BAV1227V600C | 5-1-Q | ED307573N | 6-D3 | EI353750N | 6-IC402 | EO403936N | 7-L1-B |
| BAV1227V600E | 5-1-V | ED307573N | 6-D207 | EI368809N | 7-IC1 | EO403936N | 8-L1-B |
| BAV1227V600H | 5-1-U | ED307573N | 6-D218 | EI368809N | 8-IC1 | EO408834N | 7-L52 |
| BB428300N | 3-55 | ED307573N | 6-D231 | EI368829N | 7-X1 | EO408956N | 7-L6-B |
| BD428492N | 15-15-Q | ED307573N | 6-D232 | EI389471N | 6-IC1 | EO408957N | 8-L7-A |
| BD432228N | 15-15-K | ED307573N | 6-D301 | EI390053N | 6-IC2 | EO410255N | 7-L6-A |
| BD432229N | 15-15-L | ED307573N | 6-D405 | EI403233N | 6-IC403 | EO410256N | 8-L7-C |
| BD432230N | 15-15-M | ED307573N | 6-D406 | EI405660N | 6-X601-A | EO414830N | 6-L402 |
| BD432231N | 15-15-N | ED307573N | 6-D410 | EI405660N | 6-X602 | EO416716N | 7-L5-A |
| BD432232N | 15-15-P | ED307573N | 6-D412 | EI419278N | 6-IC301 | EO416716N | 7-L51 |
| BD432269N | 15-15-A | ED307573N | 6-D413 | EI422128N | 6-IC201 | EO419251N | 8-L7-B |
| BD432271N | 15-15-B | ED307573N | 6-D601 | EI422145N | 6-IC405 | EO422134N | 6-L203 |
| BD432272N | 15-15-E | ED307573N | 6-D602 | EI422442N | 6-IC404-A | EO422134N | 6-L205 |
| BD432273N | 15-15-F | ED307573N | 6-D603 | EI425188N | 11-IC902 | EO422473N | 6-L603 |
| BD432274N | 15-15-G | ED307573N | 9-D851 | EI425240N | 6-X401 | EO422473N | 6-L671 |
| BD432275N | 15-15-H | ED307573N | 11-D901 | EI428401N | 6-IC406 | EO422474N | 6-L697 |
| BD432276N | 15-15-I | ED307573N | 14-D301 | EI428403N | 6-IC407 | EO422476N | 6-L674 |
| BD432277N | 15-15-J | ED390012N | 6-D402 | EI428406N | 6-IC751 | EO422477N | 6-L606 |
| BD432326N | 15-15-S | ED390012N | 6-D403 | EI429904N | 11-IC901 | EO422477N | 6-L652 |
| BD432327N | 15-15-T | ED394991N | 6-D215-B | EI430862N | 12-IC101 | EO422478N | 6-L610 |
| BD432328N | 15-15-U | ED401046J | 6-D209-B | EI430864N | 12-IC102 | EO422478N | 6-L651 |
| BD432329N | 15-15-V | ED401046J | 6-D214-B | EI430866N | 12-X101 | EO422479N | 6-L601 |
| BD432330N | 15-15-W | ED403280N | 6-D220 | EI431006N | 6-X601-B | EO422479N | 6-L605 |
| BD432331N | 15-15-X | ED403280N | 6-D221 | EI431275N | 6-IC404-B | EO422488N | 6-L3 |
| BD432332N | 15-15-Y | ED404220N | 12-D101 | EI431323N | 6-X402 | EO422488N | 6-L653 |
| BD432333N | 15-15-XA | ED404242N | 6-D229 | EI432778N | 9-IC851-A | EO424201N | 6-L2-C |
| BD432525N | 15-15-Z | ED404242N | 6-D230 | EI432779N | 9-IC851-B | EO425199N | 6-L2-B |
| BD432564N | 15-15-D | ED418622N | 6-D201 | EI432780N | 6-IC697 | EO425203N | 6-L676 |
| BD432565N | 15-15-O | ED418622N | 6-D202 | EI432781N | 6-IC601-A | EO425203N | 6-L677 |
| BD433475N | 15-15-R | ED418622N | 6-D203 | EI432783N | 6-IC101 | EO426410N | 6-L352-B |
| BD433856N | 15-15-C | ED418622N | 6-D204 | EI432784N | 6-IC601-B | EO427373N | 7-L1-A |
| BL424913N06 | 3-53 | ED422251N | 6-D401 | EI433089N | 6-IC696 | EO427540N | 6-FL330 |

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| EO428349N | 6-L201 | ET392663N | 6-TR606 | MI420038N4 | 4-27 | SZ428508N | 6-2 |
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# ABBREVIATIONS (VIDEO)

| ABBREVIATION | EXPLANATION | ABBREVIATION | EXPLANATION |
|---|---|---|---|
| A | Audio or Analogue | MOD | MODulator |
| AC | Alternating Current | MRS | Motor ReverSe |
| ACC | Automatic Color Control | NAP | NtscAmusement Pal |
| A/C | Audio and Control | NG | Noise Gate |
| ADJ | ADJust (ment) | NICAM | Near Instanteneous CompandAudio Multiplex |
| AFC | Automatic Frequency Control | | |
| AFT | Automatic Fine Tuning | NON-LIN | NON-LINear |
| AGC | Automatic Gain Control | N.T.S.C. | National Television System Committee |
| AH | Audio Head | OSC | OSCillator |
| AL | ALways (voltage) | PAL | Phase Alternation by Line |
| ALC | Automatic Level Control | PB | Play Back |
| A-SW.P | Audio SWitching Pulse | PCB (P.C.B) | Printed Circuit Board |
| A-MUTE | Audio MUTE | P-COM | Phase-COMparator |
| ANT | ANTenna | P DOWN | Power DOWN |
| APC | Automatic Phase Control | PG | Pulse Generator |
| ASSY | ASSemblY | P.I.P | Picture In Picture |
| BAL | BALance | PL, PLG | PLunger (PLunGer) |
| B DOWN | Break DOWN | PRG (PGM) | PRoGram (ProGraM) |
| BGP | Burst Gate Pulse | PU | Pick UP (head, pulse) |
| BLK | BLocK or BLacK | PWR | PoWeR |
| BOP | Blank Output Pulse | Q | Quality factor |
| BPF | Band Pass Filter | R | Right |
| BU | Back Up (voltage) | RAM | Random Access Memory |
| B/W | Black and White | REC | RECord |
| C | Chroma or Color | REF | REFerence |
| CCD | Charge Coupled Device | REF-V | REFerence Vertical signal |
| CCIR | Comit Consultatif International des Radio communications | REG | REGulator |
| | | REV (REVW) | REView (REVieW) |
| CH (ch) | CHannel (channel) | REW | REWind |
| CLK | CLocK | RF | Radio Frequency |
| CM | Capstan Motor | ROM | Read Only Memory |
| CN | CoNnector | R.S SW | Record-Safety SWitch |
| COMP | COMParator | RST (RES) | ReSet (RESet) |
| CSW | Cassette SWitch | RVS | ReVerSe |
| CSYNC | Composite SYNC | S | Sensor, Shield |
| CTL | ConTrol | SAW | Surface Acoustic Wave |
| CUE | CUE | SC | SimulCast |
| DAC | Digital to Analog Converter | S CLK | Serial CLocK |
| DC | Direct Current | SECAM | SÉquentiel Couleur À Mémoire |
| DEMOD | DEMODulator | S & H | Sample and Hold |
| DET | DETetct (DETector) | SLP | Super Long Play |
| DL | Delay Line | SP | Standard Play |
| DM | Drum Motor | SPD | SPeeD |
| DOC | Drop Out Compensator | SRP | Supply Reel Pulse |
| D.P.E | Drum Phase Error | SRV | SeRVo |
| D.PG | Drum Pulse Generator | SOW | Sync On Word |
| EE | Electronic to Electronic | STBY | STandBY |
| EF | Emitter Follower | S.VHS | Super VHS |
| EMPHA | EMPHAsis | SW | SWitch |
| ENV | ENVelope | SW'NG | SWitchiNG |
| EP | Extended Play | SWP | SWitching Pulse |
| EP ROM | Erasable Programmable ROM | SYNC | SYNChronize |
| EQ | EQualizer | T-AUDIO | Tuner AUDIO |
| FE | Full track Erase | TPZ (TRAPE) | TraPeZoid (TRAPEzoid) |
| FF | Flip-Flop or Fast Foward | TRK | TRacKing |
| FG | Frequency Generator | TRP | Take up Reel Pulse |
| Fig | Figure | T/U | Take Up |
| FLD | FLuorescent Display | TV | TeleVision |
| FM | Frequency Modulation | UHF | Ultra High Frequency |
| Fo | resonance Frequency | UNR | UNRegulated (voltage) |
| FREQ | FREQuency | V | Vertical or Video |
| GND | GrouND | VASS | Video Address Search System |
| H | Horizontal | VCO | Voltage Controlled Oscillator |
| HP | Horizontal (sync) pulse | VH | Video Head |
| HPF | High Pass Filter | VHF | Very High Frequency |
| HQ | High Quality System | VHS | Video Home System |
| IC | Integrated Circuit | VIF | Video Intermediate Frequency |
| ID | IDentification | VISS | Video Index Search System |
| IDL | IDLe (Voltage) | VJ | Video Judge |
| IMS | Interactive Monitor System | VM | Voltage for Memory |
| INS | INSert | VOB | Video On Blank |
| INV | INVerter | VOW | Video On Word |
| L | Left | VP | Vertical (sync) Pulse |
| LED | Light Emitting Diode | VPS | Video Program System |
| LIM | LIMitter | VPT | Video Programming by video Text |
| LM | Loading Motor | VT | Voltage' for Tuning |
| LM STP | Loading Motor STop | WHT | WHiTe |
| LP | Long Play | Y | Luminance |
| LPF | Low Pass Filter | 2H | 2 Hour (SP) |
| ME-SECAM | Middle East SECAM | 4H | 4 Hour (LP) |
| MI-COM | MIcro COMputer | 6H | 6 Hour (SLP/EP) |
| MM | Mono-stayble Multi | | |


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# AKAI

## MODEL VS-G240, G241, G245, G246, G247
## MODEL VS-G250, G254, G255, G257
## MODEL VS-G440, G445, G455, G457

# SCHEMATIC DIAGRAMS AND PC BOARDS

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**PRINCIPAL DIFFERENCES BETWEEN THE MODELS**

| MODEL No. | VIDEO HEAD | 2 SPEED | * WITH DECODER | VPS | PDC | * E²C ROM | |
|---|---|---|---|---|---|---|---|
| | | | | | | 2 kB | 4 kB |
| VS-G240EA | 2 HEAD | – | – | – | – | O | – |
| VS-G240EDG | 2 HEAD | – | – | – | – | O | – |
| VS-G240EK | 2 HEAD | O | – | – | O | – | O |
| VS-G240EM | 2 HEAD | O | – | – | – | O | – |
| VS-G240EOH(E) | 2 HEAD | – | O | – | – | O | – |
| VS-G240EOH(Y1) | 2 HEAD | – | – | – | – | O | – |
| VS-G241EOH(Y1) | 2 HEAD | – | – | – | – | O | – |
| VS-G245EA | 2 HEAD | – | – | – | – | – | O |
| VS-G245EDG | 2 HEAD | – | O | O | – | – | O |
| VS-G245EK | 2 HEAD | O | – | – | O | O | – |
| VS-G245EO | 2 HEAD | – | – | – | – | – | O |
| VS-G245EOH(Y1) | 2 HEAD | – | – | – | – | – | O |
| VS-G246EA | 2 HEAD | – | – | – | – | – | O |
| VS-G246EK | 2 HEAD | O | – | – | O | O | – |
| VS-G247EOG | 2 HEAD | – | O | O | – | – | O |
| VS-G250EM-K | 2 HEAD | O | – | – | – | O | – |
| VS-G254EOH(Y1) | 2 HEAD | – | O | – | O | O | – |
| VS-G255EOH(E) | 2 HEAD | – | O | – | O | O | – |
| VS-G255EOH(Y1) | 2 HEAD | – | O | – | O | O | – |
| VS-G257EOG | 2 HEAD | – | O | O | – | O | – |
| VS-G440EA | 4 HEAD | O | – | – | – | O | – |
| VS-G440EDG | 4 HEAD | O | – | – | – | O | – |
| VS-G445EA | 4 HEAD | O | – | – | – | – | O |
| VS-G445EDG | 4 HEAD | O | O | O | – | – | O |
| VS-G445EK | 4 HEAD | O | – | – | O | O | – |
| VS-G445EO | 4 HEAD | O | – | – | – | – | O |
| VS-G445EOH(Y1) | 4 HEAD | O | – | – | – | – | O |
| VS-G455EOH(E) | 4 HEAD | O | O | – | O | O | – |
| VS-G455EOH(Y1) | 4 HEAD | O | O | – | O | O | – |
| VS-G457EOG | 4 HEAD | O | O | O | – | O | – |

*** NOTE:**

1. Models with the CANAL PLUS PCB (DECODER) are shown as "WITH DEC" in the schematic diagrams and block diagrams. Models without the CANAL PLUS PCB are shown as "WITHOUT DEC".

2. IC404 (EEP-ROM) used on the MAIN PCB is designated as follows.
   - G-CODE, SHOWVIEW or VIDEO-PLUS models without LCD remote control: 4 kB ROM.
   - Excepting above models: 2 kB ROM.

3. When you look at the schematic diagrams or block diagrams in this manual, please refer to the above information for pertinent parts information.